CRM 88-76 (Revised) / January 1989

RESEARCH MEMORANDUM

THE ROLE OF STUDENT QUALITY IN A-SCHOOL TRAINING ATTRITION: TRENDS IN SELECTED RATINGS

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Work conducted under contract N00014-87-C-0001.

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY UNCLASSSIFIED	3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for Public Release; Distribution unlimited.
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) CRM 88-76.10	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Center for Naval Analyses 6b. OFFICE SYMBOL (If applicable) CNA	7a. NAME OF MONITORING ORGANIZATION Chief of Naval Operations (OP-81)
6c. ADDRESS (City, State, and ZIP Code) 4401 Ford Avenue Alexandria, Virginia 22302-0268	7b. ADDRESS (City, State, and ZIP Code) Navy Department Washington, D.C. 20350-1000
8a. NAME OF FUNDING ORGANIZATION Office of Naval Research 8b. OFFICE SYMBOL (If applicable) ONR	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER N00014-87-C-0001
8c. ADDRESS (City, State, and ZIP Code) 800 North Quincy Street Arlington, Virginia 22217	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. 65154N; PROJECT NO. R0148; TASK NO.; WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)
The Role of Student Quality in A-School Training Attrition: Trends in Selected Ratings

12. PERSONAL AUTHOR(S)
Patricia E. Byrnes, Alan J. Marcus, Janet E. Thomason

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM TO	January 1989	73

16. SUPPLEMENTARY NOTATION

17. COSATI CODES		
FIELD	GROUP	SUB-GROUP
05	08	
05	09	

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
Attrition, Courses (education), Enlisted personnel, Job training, Mental ability, Naval personnel, Naval training, Performance (human), Personnel retention, Quality, Ratings, Recruits, Skills, Statistical analysis, Statistical samples, Tables (data)

19. ABSTRACT (Continue on reverse if necessary and identify by block number)
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20. DISTRIBUTION / AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
☐ UNCLASSIFIED / UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS	UNCLASSIFIED

22a. NAME OF RESPONSIBLE INDIVIDUAL	22b. TELEPHONE (Include Area Code)	22c. OFFICE SYMBOL

DD FORM 1473, 84 MAR

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All other editions are obsolete.

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MEMORANDUM FOR DISTRIBUTION LIST

Subj: Center for Naval Analyses Research Memorandum 88-76

Encl: (1) CNA Research Memorandum 88-76, *The Role of Student Quality in A-School Training Attrition: Trends in Selected Ratings*, by P.E. Byrnes, A.J. Marcus, and J.E. Thomason, May 1988

1. Enclosure (1) is forwarded as a matter of possible interest.

2. This Research Memorandum examines attrition rates in a sample of A-school pipelines in 1981, 1983, and 1985. The memorandum examines the differences in attrition between students of varying quality in technical and nontechnical ratings. The reasons for attrition and changes over time are also examined.

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Subj: Center for Naval Analyses Research Memorandum 88-76

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CRM 88-76 (Revised) / January 1989

THE ROLE OF STUDENT QUALITY IN A-SCHOOL TRAINING ATTRITION: TRENDS IN SELECTED RATINGS

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ABSTRACT

This research memorandum examines the extent and nature of attrition from initial skill (A-school) training in selected samples of technical and nontechnical ratings. The influence of recruit-quality characteristics on both academic and nonacademic attrition rates is discussed. In addition, the analysis examines how attrition varies by type of A-school training and how it has changed over time.

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INTRODUCTION

About two-thirds of Navy non-prior-service recruits proceed directly from recruit training to A-school, where they are taught the skills necessary to become qualified for a rating. A-school pipelines comprise from one to more than half a dozen courses and can last from just over one month to well over one year.

Not all recruits will successfully complete their A-school training. As the data in this paper make clear, attrition rates run as high as 30 percent in many ratings. This research memorandum describes how recruit quality characteristics affect academic and nonacademic attrition rates. In addition, it examines how attrition varies by type of A-school training pipeline and how it has changed over time.

Navy students spend about 25,000 man-years in A-school each year. More than 4,000 man-years of instructor and staff time are required to support that training. With an investment that large, even small improvements in the efficiency of the system can lead to substantial savings. Reductions in attrition are one potential improvement. An understanding of the factors that affect attrition is a necessary input to policy decisions that can affect attrition rates.

ATTRITION-RATE ESTIMATION

There are over 100 ratings in the Navy. This analysis uses the A-school training in 20 of these ratings, which account for more than half of the A-school training load. Table 1 describes the sample of ratings selected. The ratings are classified into two groups—technical and non-technical. Some of the ratings are classified further by enlistment program (four or six years) or whether the A-school training leads to nuclear field qualification because the training pipelines varied with these characteristics. In total, A-school training for 27 different rating pipelines is analyzed.

Recruits who are slated to become rated go directly from the two-month recruit training course to an A-school. In most cases, completion of a specified course or a sequence of courses is required for recruits to be rated.[1] The Chief of Naval Education and Training (CNET) publishes an instruction [1], at least quarterly, which lists the A-school pipelines for each rating. The instructions for the end of FY 1981, 1983, and 1985 were used to define the A-school pipelines for the ratings in table 1.[2]

1. It is possible to become occupationally qualified through on-the-job training (OJT) without attending A-school.
2. The constructed pipelines by fiscal year are provided in appendix A.

Table 1. Description of selected Navy enlisted ratings

	Technical ratings
AC	Air traffic controller
AE	Aviation electrician's mate
AQ*	Aviator control technician
AT*	Avionics technician
BT6	Boiler technician—6YO
CTM	Cryptologic maintenance technician
DS	Data systems technician
EMNF	Electrician's mate—nuclear field
ET	Electronics technician
ETNF	Electronics technician—nuclear field
EW*	Electronic warfare technician
FTG	Fire-control technician—guns
FTM	Fire-control technician—missiles
MMNF	Machinist's mate—nuclear field
OS	Operations specialist
	Nontechnical ratings
BT4	Boiler technician—4YO
EM	*Electrician's mate*
EO	Equipment operator
HM	Hospitalman
HT	Hull maintenance technician
MM4	Machinist's Mate—4YO
MS	Mess management specialist
RM	Radioman
SK	Storekeeper

NOTE: Ratings with an asterisk are classified further by enlistment, i.e., four- and six-year obligors.

The method used to compute pass and attrition rates in this study differs from previous analyses. Appendix B contrasts the typical procedure and the estimation procedure used in this analysis. Briefly, the usual procedure is to first compute course attrition rates as the ratio of the number of students who failed a course in a given time period to the total number enrolled in the course for that time period. The pipeline attrition rates for pipelines with more than one course are then the product of the attrition rates for courses in the pipeline. The methodology used in this analysis is different in two ways. First, the estimates of course attrition are based on tracking individuals through courses. Unlike the usual method, this procedure ensures that the same cohort of individuals is included in the numerator (the failures) and denominator (the entrants), and more accurate estimates of course attrition are obtained. Second, in cases where there is

more than one course, the pipeline attrition estimates are weighted by the estimated probability of surviving each course in the pipeline.

Using this methodology, pass and attrition rates are computed for student-quality groups. Quality groups were defined based on two attributes—high school diploma graduate (HSDG) or non-high school diploma graduate (NHSDG) and the Armed Forces Qualification Test (AFQT) category. These groups conform to the Navy's normal designation of recruits into four quality groups—A, B, C, and D cells—with the cells further divided into upper and lower halves. Table 2 describes the education status and AFQT categories cutoffs (including AFQT percentiles) used in the classification scheme.

Table 2. *Student-quality classification by high school diploma status*

AFQT category (AFQT percentile)	HSDG	NHSDG
I-II (65-100)	AU	BU
IIIA (50-64)	AL	BL
IIIB (31-49)	CU	DU
IV (21-30)	CL	*

NOTE: DLs were not included in the analysis because there are few students in these cells.

For each of the courses in the A-school pipelines, progress or attrition was tracked for all students who entered a course in FY 1981, FY 1983, or FY 1985. Table 3 provides a description of the sample by student-quality group and fiscal year. Note that an observation is a "student-course," although if a course is found in more than one pipeline, students taking that course would be counted more than once. The distribution of students by quality varies by fiscal year. In FY 1983, over 90 percent have high school diplomas (A- and C-cell) compared to less than 84 percent in FY 1981. Although there were slightly more high school graduates in FY 1985 (91 percent A- and C-cell) compared to FY 1983, there were more A-cell students in FY 1983 (62 percent in FY 1983 compared to 60 percent in FY 1985).

PATTERNS IN PIPELINE ATTRITION RATES

Using the sample, a data set consisting of 526 observations of the computed pass and attrition rates was constructed. These data are pass and attrition rates for each rating by student quality and fiscal year.[1] Table 4 summarizes these data with the average pass and attrition rates

1. The data are provided in appendix B.

for the sample and each subsample (technical and nontechnical ratings as grouped in table 1) by fiscal year. For the entire sample, the A-school pipeline pass rates range from almost 82 percent in FY 1981 to just over 77 percent in FY 1985. These sample means mask the differences in pass rates across the ratings, which are evident from the difference in the average pass rates for the two groups of ratings. The technical ratings have much lower pass rates. Across the three years, the pass rate in nontechnical pipelines is, on average, about 18 percentage points higher.

Table 3. Sample distribution by student-quality group and fiscal year

Quality group[a]	Number of student courses[b] FY 1981	FY 1983	FY 1985
AU	16,361	19,682	16,606
	(45)	(49)	(47)
AL	5,153	5,283	4,544
	(14)	(13)	(13)
BU	2,893	2,259	1,402
	(8)	(6)	(4)
BL	1,698	938	905
	(5)	(2)	(3)
CU	3,412	3,812	3,700
	(10)	(10)	(10)
CL	5,346	7,089	7,646
	(15)	(18)	(21)
DU	1,120	774	677
	(3)	(2)	(2)
Total	35,983	39,837	35,480

a. Quality groups are defined as the following:
AU = HSDG, AFQT I-II CU = HSDG, AFQT IIIB
AL = HSDG, AFQT IIIA CL = HSDG, AFQT IV
BU = NHS, AFQT I-II DU = NHS, AFQT IIIB
BL = NHS, AFQT IIIA

b. Numbers in parentheses are column percentages.

Table 4. Average pass and attrition rates by rating group

	Mean percentage[a]		
	1981	1983	1985
Pass			
All ratings	81.9	80.4	77.2
Technical	69.9	76.6	69.4
Nontechnical	91.8	90.8	87.0
Academic attrition			
All ratings	7.8	9.9	13.8
Technical	14.1	12.3	17.1
Nontechnical	2.8	4.3	7.1
Nonacademic attrition			
All ratings	10.3	9.7	9.0
Technical	16.0	11.1	13.5
Nontechnical	5.4	4.9	5.9

a. Means are weighted by the number of students in each pipeline.

For the sample, attrition decreased from FY 1981 to FY 1983 and increased in FY 1985. The increase in attrition between FY 1983 and FY 1985 for the total sample is apparent for both rating groups. The decline in pass rates between 1981 and 1985 for the technical ratings is quite small relative to nontechnical ratings.

The distinction in attrition by type—nonacademic versus academic—is interesting. In FY 1985 the academic portion of attrition increased relative to nonacademic attrition. This trend is evident for both rating groups, although more consistent for the nontechnical ratings. In FY 1981, 43 percent of attrition was for academic reasons; this percentage had increased 17 points by FY 1985, when academic attrition made up 60 percent of total attrition. This shift appears to be the result of an increase in academic attrition rates rather than a decrease in nonacademic attrition.

The increase in attrition in FY 1985 and the changes in attrition by type (i.e., relatively more academic attrition) could be due to differences in the composition of students by quality group. Table 5 gives the average attrition and pass rates by quality group for the sample (all ratings and fiscal years) and for the two rating-group subsamples. Note that there are differences in the pass and attrition rates across quality groups when the sample is stratified by the technical and nontechnical characteristics. For example, for the entire sample, the AFQT IIIA students have higher overall pass rates than the AFQT I-II although students in higher AFQT categories

have a higher average pass rate in each of the subsamples. This occurs because, compared to AFQT IIIB graduates, graduates in higher AFQT categories are more likely to be in the technical ratings, which have much lower average pass rates. As these results make clear, the extent and nature of attrition across quality groups may be masked if attrition rates do not control for differences in training pipelines.

Table 5. Average attrition and pass rates: percentages by quality group

	Pass		Academic attrition		Nonacademic attrition	
	Graduate	Non-graduate	Graduate	Non-graduate	Graduate	Non-graduate
Total sample						
AFQT I-II	80.7	75.0	9.5	7.9	9.7	17.1
AFQT IIIA	83.1	71.8	9.3	9.9	7.6	18.3
AFQT IIIB	83.1	74.4	9.9	10.4	7.0	15.2
AFQT IV	81.1		11.6		7.3	
Technical						
AFQT I-II	74.7	67.6	12.9	10.9	12.5	21.5
AFQT IIIA	74.1	60.4	15.1	15.6	10.8	23.8
AFQT IIIB	69.9	61.9	19.3	19.0	10.8	19.1
AFQT IV	61.5		24.4		14.1	
Nontechnical						
AFQT I-II	94.9	87.0	1.7	3.0	3.4	10.0
AFQT IIIA	92.2	80.4	3.4	5.5	4.3	14.1
AFQT IIIB	90.6	78.9	4.5	7.3	4.8	12.8
AFQT IV	86.6		8.0		5.4	

Differences in the A-school training across ratings or within a rating across fiscal years can be proxied by the planned length (in days) of the training pipeline for a rating. Table 6 gives the average minimum and maximum pipeline length by rating group and fiscal year. Within each rating group, the length of the training pipeline varies. For the technical ratings, pipelines range from just over three months to more than one year. The longest pipeline in the nontechnical rating group is much shorter—about half a year.

Table 6. Statistics of pipeline-length variables

	Mean[a]	Minimum	Maximum
Technical			
1981	216	82	436
1983	216	89	440
1985	231	106	442
Nontechnical			
1981	75	45	136
1983	90	45	171
1985	97	54	187

a. Means are weighted by the number of students in each course.

On average, the length of training time for both rating group samples increased. For the technical ratings, the average pipeline increased by almost 15 days (6 percent) between FY 1981 and FY 1985. The average pipeline for the nontechnical ratings increased even more—over 22 days (almost 30 percent) between FY 1981 and FY 1985. The most plausible explanation for this growth is that the pipelines cover more and perhaps more difficult material. Characteristics of the training pipeline, such as length of time in training, are likely to affect the probability of passing and becoming qualified in the rating. The multivariate analysis presented in the next section demonstrates how attrition is affected by changes in the composition of students, holding constant the training content (measured by the length of the pipeline).

STATISTICAL ANALYSIS OF A-SCHOOL ATTRITION

In the previous section, analyses of the computed attrition rates in the A-school pipeline suggest that A-school attrition varies by student characteristics, type of training, and fiscal year. The statistical model developed in this section assesses how these factors contribute to attrition. The model estimates the attrition rate for individuals with differing characteristics, holding pipeline length constant. The results can help determine the criteria (e.g., education versus AFQT category) for lower attrition in initial skill training.

Statistical Model

This study uses the multinomial logit model to estimate the probabilities of failing for academic reasons, failing for nonacademic reasons, and passing the A-school pipelines. The logit model is described in greater detail in appendix C.[1]

1. The multinomial logit model has been used in CNA studies [3] of retention where extensions are treated explicitly as a third option in stay/leave models. The model is described in detail in [4].

In log-odds form, the multinomial logit model may be expressed as

$$log\ (K/P) = \beta_K X + u_K \tag{1}$$

and

$$log\ (L/P) = \beta_L X + u_L \ . \tag{2}$$

In equations 1 and 2, K represents the academic attrition rate, L represents the nonacademic attrition rate, and P represents the pass rate. The vector X contains student characteristics or other variables that influence the three rates, subject to the constraint that $K + L + P = 1$. The unknown parameters to be estimated are denoted by β; u_K and u_L are random disturbance terms. The estimates of β can be used to predict K, L, or P for particular values of X. The predicted attrition rates are obtained from the following formula:

$$K = exp\left(X'\beta_K\right)/D \ , \tag{3}$$

$$L = exp\left(X'\beta_L\right)/D \ , \tag{4}$$

and

$$P = 1/D \ , \tag{5}$$

where $D = \left[1 + exp\left(X'\beta_K\right) + exp\left(X'\beta_L\right)\right]$.

The data consist of the 526 observations of the computed pass and attrition rates for an A-school pipeline, quality groups, and fiscal year. The model is estimated separately for the two (technical and nontechnical) rating groups. The vector of explanatory variables includes seven quality-group dummy variables, two fiscal year dummy variables, and the pipeline-length variable. The pipeline-length variable varies by fiscal year and rating, but not across quality groups. The number of student-courses on which the rates are based is used to weight the observations in the regressions.

A-School Attrition and Student Quality

The estimation results are presented in detail in appendix C. A convenient way of summarizing the results and interpreting the regression coefficients is to estimate the predicted pass

and attrition rates for the specific student-quality groups. The procedure to compute these rates from the model is also described in appendix C. Table 7 summarizes the results for the two rating subsamples. The difference between these predicted pass and attrition percentages and the average percentages (in table 5) is that the predicted rates hold pipeline length and the mix of students constant.

Table 7. Predicted pass and attrition percentages by quality and rating group

	Pass		Academic attrition		Nonacademic attrition	
	Graduate	Non-graduate	Graduate	Non-graduate	Graduate	Non-graduate
Technical						
AFQT I-II	78.9	66.5	11.2	11.7	9.9	21.8
AFQT IIIA	73.2	56.0	15.8	17.6	11.0	26.3
AFQT IIIB	67.3	55.6	20.9	21.9	11.8	22.5
AFQT IV	56.9		26.8		16.3	
Nontechnical						
AFQT I-II	94.9	86.6	1.6	2.9	3.5	10.5
AFQT IIIA	92.5	79.6	3.1	5.5	4.4	14.9
AFQT IIIB	91.4	78.4	3.8	7.1	4.8	14.5
AFQT IV	88.1		6.5		5.3	

The results for both rating groups show that students in higher AFQT categories have higher pass rates within the education category. For the nontechnical ratings a somewhat weaker pattern of higher pass rates with higher AFQT category is present. For example, the difference in pass rates between AFQT I-II and AFQT IIIB students is 11.6 percentage points in the technical ratings and only 3.5 percentage points in the nontechnical ratings.

Holding the education level constant, the differences in attrition across AFQT categories is due primarily to differences in academic attrition. AFQT category does not affect nonacademic attrition substantially in either rating subsample. Within the education group, differences in predicted academic attrition between AFQT categories range from less than 1 percentage point in the nontechnical ratings to over a 10 percentage point difference between AFQT I-II and AFQT IIIB graduates in the technical rating subsample. Differences in nonacademic attrition within educational groups are much smaller. For example, the difference in nonacademic attrition between AFQT I-II and AFQT IIIB, within education groups, is less than 2 percent for both rating subsamples.

Although the AFQT category has an effect on academic attrition only, the education category has a consistent and statistically significant influence on both academic and nonacademic attrition. Other things equal, the results suggest that within an AFQT category, those who finished high school always have lower academic and nonacademic attrition than those who did not finish high school. Within the AFQT category, educational status has a much smaller effect on academic attrition, although those who finished high school are more likely not to fail in the technical ratings for academic reasons.

Table 8 gives the percentage difference in predicted pass and attrition rates between HSDG and non-HSDG for each AFQT category. The importance of the educational category status in predicting success in A-school is very strong; in every AFQT category those who finished high school are more likely to pass. In fact, graduates in the AFQT IIIA and AFQT IIIB categories are more likely to pass than nongraduates in the highest AFQT category. This holds for both rating groups, although the effect is much more apparent in the nontechnical rating group. Holding AFQT category constant, educational status has a very small effect on academic attrition. Higher AFQT categories have lower academic attrition, regardless of educational group. However, the difference in nonacademic attrition across education groups, both within and across AFQT categories, is consistent and large. In the technical ratings, upper AFQT categories non-high school graduates (BU and BL) have twice the nonacademic attrition of their high school graduate counterparts. For the nontechnical ratings, they have over three times the nonacademic attrition.

Table 8. Differences in predicted attrition by educational status (HSDG and NHSDG)

Mental group	Pass rate (P)	Academic attrition rate (K)	Nonacademic attrition rate (L)
		Technical	
AFQT I-II	12.4	−0.5	−11.9
AFQT IIIA	17.2	−1.8	−15.3
AFQT IIIB	11.8	−1.0	−10.7
		Nontechnical	
AFQT I-II	8.3	−1.3	−7.0
AFQT IIIA	12.9	−2.4	−10.5
AFQT IIIB	13.0	−3.3	−9.7

A-School Attrition and Pipeline Length

The regression results also suggest that length of the A-school training pipeline has a consistent and statistically significant effect on both academic and nonacademic attrition in both rating groups. Other things equal, the longer the pipeline, the lower the pass rate and the higher the academic and nonacademic attrition rates. Table 9 gives the estimated effect of a 10-percent increase in the average pipeline length.[1] Using the average pipeline lengths for FY 1985, a 10-percent increase is about 23 days for the technical ratings and about 10 days for the nontechnical ratings. A 10-percent increase decreases the pass rate by over one-half of a percentage point in the nontechnical rating group and by almost 2 percentage points in the technical rating group. There is no apparent differential impact of pipeline length on academic and nonacademic attrition.

Table 9. Effects of 10-percent increase in average pipeline length

	Percent increase		
	Pass	Academic	Nonacademic
Technical	−1.9	0.9	.0
Nontechnical	−0.6	0.3	0.3

Fiscal Year Differences in Attrition Patterns

The set of explanatory variables also included dummy variables for fiscal year. Except for one case, the fiscal year coefficients were statistically significant. Table 10 gives the predicted pass and attrition rates by fiscal year and summarizes the regression results. The average pass rate is higher in FY 1983 than in the other years. Although statistically significant, differences in pass rates across years are relatively small in the nontechnical rating group.

The stability of the estimated relationship across fiscal years is an important consideration when using the results to design screening standards that reduce A-school attrition. Including dummy variables for fiscal years allows for differences in the average level of attrition across

1. Appendix C explains the derivation of these estimates.

years but assumes that differences by AFQT category and education are the same. A statistical test of this assumption was performed,[1] and the hypothesis of the equivalence of the model coefficients across years was rejected for both rating groups. These results imply that the pattern of attrition and quality group relationships changed across the three fiscal years.

Table 10. Predicted pass and attrition rates by fiscal year (percent)

	Pass	Academic	Nonacademic
		Technical	
FY 1981	72.6	13.6	13.8
FY 1983	78.0	11.9	10.1
FY 1985	72.7	15.4	11.9
		Nontechnical	
FY 1981	91.9	2.8	5.4
FY 1983	92.3	3.2	4.5
FY 1985	90.0	4.8	5.3

Because the attrition relationships changed from year to year, the analysis studied whether these changes were large enough to affect the A-school screening standards. To analyze this difference, predicted attrition across student-quality groups was computed based on separate fiscal year estimates of the model. Table 11 contains the results of this comparison. The major difference among the fiscal years occurs in fiscal year 1985, which has larger differences between AFQT categories within education groups. For the technical ratings in FY 1981 and FY 1983, there is little difference in the AU, AL, CU, and CL groups; in FY 1985 the diferences in these groups are significant. Although this change is significant, attrition patterns across educational groups remain constant.

CONCLUSIONS

This memorandum has examined the extent and nature of attrition from A-school in selected technical and nontechnical enlisted-rating samples. Emphasis was placed on the influence of recruit quality characteristics on attrition rates and how this relationship is affected by type of A-school training. In addition, the analysis studied how attrition changed over time.

1. The results are reported in appendix C.

Table 11. Predicted pass and attrition rates by quality group and fiscal year (percent)

Quality group	FY 1981		FY 1983		FY 1985	
	Technical	Nontechnical	Technical	Nontechnical	Technical	Nontechnical
			Pass rate			
AU[a]	75.3	96.5	79.1	95.6	77.8	94.0
AL	70.9	94.7	75.9	92.8	68.1	90.8
BU	61.0	88.9	68.3	88.9	65.4	84.8
BL	51.8	83.3	60.4	80.6	48.7	75.9
CU	66.1	94.5	70.0	91.5	61.3	88.6
CL	58.4	92.1	72.0	89.4	43.9	83.0
DU	51.2	80.6	56.5	84.1	52.2	74.1
			Academic			
AU	12.4	0.6	11.2	1.3	12.1	2.5
AL	15.0	1.5	15.1	3.0	19.5	4.8
BU	14.1	1.4	9.8	2.6	11.9	4.5
BL	16.7	2.8	15.7	5.6	23.3	9.2
CU	21.3	1.8	19.9	3.6	24.2	6.4
CL	26.9	3.3	18.8	6.5	33.7	10.6
DU	22.8	4.8	21.1	6.9	24.4	8.9
			Nonacademic			
AU	12.3	2.9	9.6	3.1	10.1	3.5
AL	14.1	3.8	9.0	4.2	12.5	4.4
BU	24.9	9.7	21.9	8.5	22.8	10.7
BL	31.5	13.9	23.9	13.8	28.0	14.8
CU	12.7	3.8	10.1	4.8	14.5	5.0
CL	14.7	4.7	9.2	4.0	22.4	6.5
DU	26.0	14.6	22.5	9.0	23.4	17.0

a. *Quality groups are defined as the following:*

AU = HSDG, AFQT I-II
AL = HSDG AFQT IIIA
BU = NHS, AFQT I-II
BL = NHS, AFQT IIIA
CU = HSDG, AFQT IIIB
CL = HSDG, AFQT IV
DU = NHS, AFQT IIIB

Pooled cross-section samples for FY 1981, 1983, and 1985 of selected technical and nontechnical ratings were used to estimate attrition rates by type of training, AFQT category and educational status. These data are unique in two important ways. First, the data include attrition rates by reason (academic and nonacademic), which allows for an assessment of the impact of

student and training characteristics on these different types of attrition. Information of this type is vital to policymakers and training managers interested in controlling training attrition. Second, the attrition rates were computed using CNA's Student History File (SHF), which allowed analysts to track students' progress or attrition from courses in A-school pipelines. Estimates of attrition based on tracking individuals are usually more precise.

Analysis of the attrition estimates indicates that A-school attrition rates, particularly for the highly technical ratings, are high. In FY 1985, A-school pipeline attrition averages over 31 percent for technical ratings and 13 percent for nontechnical ratings. Comparing FY 1985 to FY 1983 suggests that attrition increased. Controlling for changes in pipeline length and the composition of students, attrition increased over 5 percentage points in the technical ratings and 2 percentage points in the nontechnical ratings. Across fiscal years, the distinction in attrition by reason is interesting. In FY 1985, the academic portion of attrition increased relative to non-academic attrition. In FY 1981, 56 percent of attrition was for nonacademic reasons; this percentage decreased by 12 percentage points in FY 1985, when nonacademic attrition made up less than 44 percent of total attrition.

The statistical model developed to analyze the effect of student and training characteristics on attrition confirms patte ns of attrition across quality groups. The primary result is that both AFQT category and educational status affect attrition in both technical and nontechnical A-school training. Holding the education level constant, AFQT category has a statistically significant effect on the academic attrition rate in the more technical A-schools. AFQT category has no significant effect on nonacademic attrition in either rating group.

Education status has a consistent influence on both types of attrition. Holding AFQT category constant, those who finished high school are more likely to pass in both technical and nontechnical schools. In fact, graduates in the lower AFQT categories are more likely to pass than nongraduates in the highest AFQT category. Although higher AFQT categories have lower academic attrition, students who have not completed high school have twice the nonacademic attrition in technical ratings and more than three times the nonacademic attrition in the nontechnical ratings than those students who completed high school.

The analysis tested the stability of the predicted attrition rates across fiscal years. The results indicate that there are differences in the average level of attrition across fiscal years as well as quantitative differences in the attrition and quality-group relationships. The primary difference is that in FY 1985 there are greater differences in attrition between AFQT categories within education groups than in earlier years. One reason for this result could be that training has become more technical within ratings, and this is not captured with the pipeline-length variable. Determining if this pattern persists would require more current data.

REFERENCES

[1] Chief of Naval Education and Training, CNET NOTE 1514 Code N-213, *Navy Enlisted Skill Rating Pipelines*, Oct 1981, 1983, and 1985

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[3] CNA Research Contribution 476, *Determinants of Navy Reenlistment and Extension Rates*, by Matthew S. Goldberg and John T. Warner, Dec 1982 (02047600)

[4] G.S. Maddala, *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge: Cambridge University Press, 1983

1. The number in parentheses is an internal CNA control number.

APPENDIX A

A-SCHOOL PIPELINES FOR SELECTED RATINGS

APPENDIX A

A-SCHOOL PIPELINES FOR SELECTED RATINGS

At least quarterly, the Chief of Naval Education and Training (CNET) publishes an instruction (CNET 1514) that lists the A-school pipelines for each rating, that is, the planned sequence of A-school courses. Instructions for the end of the fiscal year were used to construct a data set that contains the pipelines for each rating. Tables A-1, A-2, and A-3 contain the data for the ratings used in this analysis for FY 1981, FY 1983, and FY 1985, respectively. The first variable identifies the rating. For some ratings there is more than one pipeline; the second variable identifies the pipelines within a rating. In most cases, upper-case letters identify pipelines—A for the first pipeline, B for the second pipeline, and so on. In other cases, if the rating contains a distinct pipeline for students in a six-year obligor (6YO) program, column 2 contains a 6Y for that rating pipeline. For example, the Aviation Control Technician (AQ) had two rating pipelines in FY 1981, one for 6YOs.

The third variable gives the number of courses in the pipeline. This number also identifies the number of additional columns. These columns contain the Course Data Processing (CDP) codes and the planned length of the courses in the pipeline. The planned length is the number of calendar days in the course as reported in the instruction.

Table A-1. Rating pipelines for FY 1981

ET	6Y	2	6403	75	604L	124									
ETNF	A	4	6256	87	604E	138	130D	42	130E	170					
ETNF	B	4	6271	87	604E	138	130D	42	130E	170					
ETNF	C	4	6304	83	604E	138	130D	42	130E	170					
EW	A	5	6254	73	602A	19	602B	68	602C	12	602D	26			
EW	B	5	6275	74	602A	19	602B	68	602C	12	602D	26			
EW	C	5	6306	68	602A	19	602B	68	602C	12	602D	26			
EW	6Y	7	6254	73	602A	19	602B	68	602C	12	602D	26	603A	33	603B	26
EW	6Y	7	6275	74	602A	19	602B	68	602C	12	602D	26	603A	33	603B	26
EW	6Y	7	6306	68	602A	19	602B	68	602C	12	602D	26	603A	33	603B	26
FTG	A	2	6248	77	6377	75										
FTG	B	3	6248	77	6377	75	6376	82								
FTG	C	2	6359	79	6377	75										
FTG	D	3	6359	79	6377	75	6376	82								
FTG	E	2	6310	76	6377	75										
FTG	F	3	6310	76	6377	75	6376	82								
FTM	A	3	6249	74	6027	75	6108	82								
FTM	B	3	6358	75	6027	75	6108	82								
FTM	C	3	6311	72	6027	75	6108	82								
FTM	D	2	6249	74	6027	75										
FTM	E	2	6358	75	6027	75										
FTM	F	2	6311	72	6027	75										
HM	A	1	6084	71												
HM	B	1	6085	71												
HT	A	3	6547	7	6119	19	6106	53								
HT	B	3	6547	7	6120	19	6339	53								
HT	C	3	6547	7	6119	19	6339	53								
HT	D	3	6547	7	6120	19	6106	53								
MM	A	3	601G	3	6492	38	6262	22								
MM	B	3	601G	3	6493	29	6262	22								
MM	C	2	6262	22	6492	38										
MM	D	2	6262	22	6493	29										
MS	B	1	6125	40												
OS	A	1	6540	82												
RM	A	2	6144	52	6380	22										
RM	B	2	6144	52	6381	12										
SK	B	1	6059	40												
AC	B	1	6278	96												
AE	B	3	6218	12	6235	36	6515	75								
AQ	B	3	6220	12	6231	32	6240	125								
AQ	6Y	4	6220	12	6231	32	6240	125	6245	138						
AT	B	3	6219	12	6230	33	6239	125								
AT	6Y	4	6219	12	6230	33	6239	125	6244	138						

Table A-1 (continued)

BT	A	3	601G	3	6486	48	6260	22				
BT	B	3	601G	3	6489	26	6260	22				
BT	C	2	6260	22	6486	48						
BT	D	2	6260	22	6489	26						
CTM	A	5	6257	75	605A	68	605B	19	605C	26	6161	103
CTM	B	5	6360	77	605A	68	605B	19	605C	26	6161	103
CTM	C	5	6308	74	605A	68	605B	19	605C	26	6161	103
DS	A	2	6366	68	6131	152						
DS	C	2	6269	69	6131	152						
DS	E	2	6309	67	6131	152						
EM	A	2	6258	72	6070	45						
EM	C	2	6273	73	6070	45						
EM	E	2	6303	70	6070	45						
EO	A	1	6097	54								
EO	B	1	6292	54								
ET	A	2	6415	95	603X	194						
ET	B	2	6415	95	603Z	131						
ET	C	2	6415	95	604F	61						
ET	D	2	6408	97	603W	194						
ET	E	2	6408	97	603Z	131						
ET	F	2	6408	97	604F	61						
ET	G	2	6405	93	603W	194						
ET	H	2	6405	93	603Z	131						
ET	I	2	6405	93	604F	61						
ET	J	2	6408	97	603X	194						
ET	K	2	6405	93	603X	194						
ET	L	2	6415	95	603W	194						
ET	A	5	6450	72	604A	68	604B	26	604C	19	604D	26
ET	C	5	6446	74	604A	68	604B	26	604C	19	604D	26
ET	E	5	6447	71	604A	68	604B	26	604C	19	604D	26
ET	6Y	2	6414	95	603V	194						
ET	6Y	2	6409	97	604L	124						
ET	6Y	2	6403	75	603V	194						
ET	6Y	2	6414	95	604L	124						
ET	6Y	2	6409	97	603V	194						

Table A-2. Rating pipelines for FY 1983

AC	A	1	6278	96									
AE	A	3	6218	11	6235	36	6515	92					
AQ	B	3	6220	11	6231	32	6240	125					
AQ	6Y	4	6220	11	6231	32	6240	125	6245	138			
AT	B	3	6219	11	6230	33	6239	125					
AT	6Y	4	6219	11	6230	33	6239	125	6244	138			
BT	B	2	6260	26	6486	54							
BT	B	3	6260	26	6486	54	601G	3					
BT	6Y	4	601G	3	6486	54	6488	61	6260	26			
BT	6Y	3	6486	54	6488	61	6260	26					
CTM	A	5	6308	74	605A	68	605B	12	605C	26	6161	94	
DS	A	2	6269	69	6131	152							
DS	C	2	6309	67	6131	152							
DT	A	1	6086	84									
EM	A	2	6258	72	6070	45							
EM	C	2	6273	73	6070	45							
EM	F	2	6303	70	6070	45							
EMNF	A	4	605U	70	605Y	45	130D	42	130E	170			
EO	A	1	6097	54									
EO	B	1	6292	54									
ET	A	2	6415	95	603X	199							
ET	B	2	6415	95	603Z	134							
ET	C	2	6415	95	604F	9							
ET	F	2	6408	97	603X	199							
ET	G	2	6408	97	603Z	134							
ET	H	2	6408	97	604F	9							
ET	I	2	6405	91	603X	199							
ET	J	2	6405	91	603Z	134							
ET	K	2	6405	91	604F	9							
ET	D	2	6408	97	603W	199							
ET	E	2	6405	91	603W	199							
ET	L	2	6415	95	603W	199							
ET	A	5	6414	95	604A	68	604B	33	604C	12	604D	26	
ET	C	5	6409	97	604A	68	604B	33	604C	12	604D	26	
ET	F	5	6403	93	604A	68	604B	33	604C	12	604D	26	
ET	6Y	2	6414	95	603V	199							
ET	6Y	2	6409	97	603V	199							
ET	6Y	2	6403	93	603V	199							
ET	6Y	2	6414	95	606X	129							
ET	6Y	2	6409	97	606X	129							
ET	6Y	2	6403	93	606X	129							
ET	6Y	2	6414	95	604L	87							
ET	6Y	2	6409	97	604L	87							
ET	6Y	2	6403	93	604L	87							
ETNF	A	4	6256	87	604E	141	130D	42	130E	170			
EW	B	4	6306	68	602B	68	602C	12	608J	44			
EW	6Y	6	6306	68	602B	68	602C	12	608J	44	603A	33	603B 26

Table A-2 (continued)

FTG	A	3	6248	77	6377	75	6376	82				
FTG	B	3	6359	79	6377	75	6376	82				
FTG	C	3	6310	76	6377	75	6376	82				
FTG	D	2	6248	77	6377	75						
FTG	E	2	6359	79	6377	75						
FTG	F	2	6310	76	6377	75						
FTM	A	3	6249	74	6027	75	6108	82				
FTM	B	3	6358	75	6027	75	6108	82				
FTM	C	3	6311	72	6027	75	6108	82				
FTM	D	2	6249	74	6027	75						
FTM	E	2	6358	75	6027	75						
FTM	F	2	6311	72	6027	75						
HM	A	1	6084	71								
HM	B	1	6085	71								
HT	A	1	6119	78								
HT	B	1	6120	78								
MM	A	3	601G	3	6492	54	6262	26				
MM	B	2	6262	26	6492	54						
MM	6Y	4	601G	3	6492	54	608M	61	6262	26		
MM	6Y	3	6262	26	6492	54	608M	61				
MMNF	A	5	601G	3	6493	19	604K	26	130D	42	130E	170
MMNF	B	4	604K	26	6493	19	130D	42	130E	170		
MS	B	1	6125	40								
OT	A	1	6341	75								
OT	6Y	2	610B	49	6341	75						
RM	A	2	6144	52	6380	22						
RM	B	2	6144	52	6381	12						
RMS	B	3	6352	39	606D	49	60SJ	166				
SK	B	1	6059	43								

Table A-3. Rating pipelines for FY 1985

AC	A	1	6278	106									
AE	A	3	6218	11	6235	36	6515	103					
AQ	A	3	6220	11	6231	32	6240	117					
AQ	6Y	4	6220	11	609Z	32	610G	117	6245	138			
AT	A	3	6219	11	6230	33	6239	117					
AT	6Y	4	6219	11	610A	33	610J	117	6244	138			
BT	A	3	601G	3	6486	54	6260	30					
BT	B	2	6260	30	6486	54							
BT	6Y	4	601G	3	6486	54	6488	61	6260	30			
BT	6Y	3	6260	30	6486	54	6488	61					
CTM	A	5	6308	74	605A	68	605B	12	605C	26	6161	108	
DS	A	2	6269	69	6131	152							
DS	C	2	6309	67	6131	152							
EM	A	2	6258	72	6070	71							
EM	D	2	6273	73	6070	71							
EM	F	2	6303	70	6070	71							
EMNF	A	4	605U	70	605Y	71	130D	42	130E	170			
EO	A	1	6097	54									
EO	B	1	6292	54									
ET	A	2	6415	95	603X	201							
ET	B	2	6415	95	603Z	135							
ET	C	2	6415	95	603W	201							
ET	D	2	6408	97	603X	201							
ET	E	2	6408	97	603Z	135							
ET	F	2	6408	97	603W	201							
ET	G	2	6405	93	603X	201							
ET	H	2	6405	93	603Z	135							
ET	I	2	6405	93	603W	201							
ET	A	5	6414	95	604A	68	604B	26	604C	12	604D	26	
ET	D	5	6409	97	604A	68	604B	26	604C	12	604D	26	
ET	E	5	6403	93	604A	68	604B	26	604C	12	604D	26	
ET	6Y	2	6414	95	603V	201							
ET	6Y	2	6414	95	604L	88							
ET	6Y	2	6414	95	606X	130							
ET	6Y	2	6409	97	603V	201							
ET	6Y	2	6409	97	604L	88							
ET	6Y	2	6409	97	606X	130							
ET	6Y	2	6403	93	603V	201							
ET	6Y	2	6403	93	604L	88							
ET	6Y	2	6403	93	606X	130							
ETNF	A	4	6256	87	604E	143	130D	42	130E	170			
EW	A	4	6306	68	602B	68	602C	12	608J	47			
EW	B	4	611M	39	602B	68	602C	12	608J	47			
EW	6Y	6	6306	68	602B	68	602C	12	608J	47	603A	26	603B 26
EW	6Y	6	611M	39	602B	68	602C	12	608J	47	603A	26	603B 26
FTG	A	2	6248	77	609W	180							
FTG	B	2	6359	79	609W	180							
FTG	C	2	6310	76	609W	180							
FGS	A	2	611J	39	6337	103							

Table A-3 (continued)

FTM	A	2	6249	74	609X	180									
FTM	B	2	6358	75	609X	180									
FTM	C	2	6311	72	609X	180									
HM	A	1	6084	71											
HM	B	1	6085	71											
HT	A	1	6119	78											
HT	B	1	6120	78											
MM	A	3	601G	3	6492	54	6262	30							
MM	B	2	6262	30	6492	54									
MM	6Y	4	601G	3	6492	54	608M	61	6262	30					
MM	6Y	3	6262	30	6492	54	608M	61							
MMNF	A	5	601G	3	611G	54	604K	30	130D	42	130E	170			
MMNF	B	4	604K	30	611G	54	130D	42	130E	170					
MS	A	1	6125	40											
OS	A	1	6540	117											
RM	A	1	611E	96											
RMS	A	13	611E	96	605K	12	605H	12	605G	12	605F	12	605E	12	
			605L	12	604Y	12	604Z	12	605D	12	605M	12	605N	12	605P 12
SK	B	1	6059	59											

APPENDIX B

ATTRITION-RATE ESTIMATION AND SUPPORTING DATA TABLES

APPENDIX B

ATTRITION-RATE ESTIMATION AND SUPPORTING DATA TABLES

The method used to compute course attrition rates in this study is different than in previous analyses. Typically, course attrition rates are computed as one minus the ratio of the number of students who passed a course in a given time period to the total number enrolled in the course for that time period.

Attrition estimates done by the Chief of Naval Education and Training (CNET) have traditionally been derived from fiscal year course information in the Training Summary File (TSF). The number of attrites during the fiscal year is divided by the student flow, where the flow equals one-half the number of entrants, attrites, and graduates during the year. A potential problem results because the entrants and the attrites (or graduates) are not necessarily the same people. If the number of entrants is fairly steady from year to year, there will be no appreciable problem. When the number of entrants changes significantly, some of the resulting increase in attrites (or graduates) will not occur until the following fiscal year. As a result, the attrition rate will be estimated incorrectly. This effect will be largest in the longest courses. When the number of entrants is growing, the attrition rate will tend to be underestimated; conversely, when the number of entrants is declining, attrition will be overestimated.

To circumvent this problem, the estimates of A-school pass and attrition rates are based on tracking individuals through courses (CDPs) using CNA's Student History File (SHF). These files facilitate tracking individuals through courses and across years. The SHF is organized by fiscal year; within each FY file the data are organized by SSN and within each SSN by CDP. Constructing a pass-rate for each CDP found in an A-school pipeline in FY 1985, for example, involves using files from FY 1985 and FY 1986. First the SSN-CDPs are scanned to find a match with a CDP from a pipeline. Every time there is a hit, a code created in the data file checks whether the individual (1) started the course in the FY (FY 1985) and finished it in the same year, (2) started it in the FY but finished in the next FY (FY 1986), or (3) started it in the previous FY (FY 1984). Cases (1) and (2), where the individual started the course in FY 1985, are of interest here. Now the FY 1985 file can be used by itself (case 1) or in conjunction with the FY 1986 file (case 2) to calculate the total days the individual was under instruction, total supernumerary time, and if the individual passed or failed the course. Tracking individuals permits the calculation of the ratio of those individuals who pass to those taking (pass and fail) the course.

Once course survival or attrition rates are computed, the next step is to compute the survival or attrition rate for the pipeline (the sequence of courses required) for each rating. The analysis done at CNA follows an individual through the completion of a course but does not track individuals through an entire pipeline. The probability of surviving a pipeline is the product of the survival (or pass) rates of each course in the pipeline. For example, in a three-course

pipeline, the probability of survival is estimated as the pass-rate in course 1 times the rate in course 2 times the rate in course 3. The probability of attrition by quality group from a pipeline is estimated in a different fashion. The estimated probability of attrition from a pipeline is the sum of the attrition rates from each course weighted by the estimated probability of surviving to that course in the pipeline. For example, in a three-course pipeline, the pipeline attrition rate is the attrition rate in the first course (K_1) plus the attrition rate in the second course (K_2), weighted by the pass rate of the first course (P_1) plus the attrition rate in the third course (K_3), weighted by the estimated survival in the first two courses ($P_1 \times P_2$); that is, the estimated pipeline attrition rate is $K_1 + K_2P_1 + K_3P_1P_2$ for a three-course pipeline.

If there is one pipeline for a rating, further manipulation of the data is unnecessary. Otherwise, a method for weighting the different pipelines must be devised. One potential weighting method used in this analysis is illustrated for the ET-6YO rating. The FY 1985 pipeline for ET-6YOs lists 9 two-course pipelines (see appendix A). Students could take CDP 6403, 6409, or 6414 followed by a second CDP: 603V, 604L, or 606X. A probability of surviving the first course was computed as the weighted average (weighted by entrants) of the pass rates in 6403, 6409, and 6414. A similar survival rate was calculated for the second course. The rating survival rate was then calculated as the product of the rate in the first course and the rate in the second course.

For each fiscal year, over 30,000 students entering one of the pipeline courses were followed and their progress in each course determined.[1] These fiscal year samples were used to compute the pass and attrition rates. Tables B-1, B-2, and B-3 contain the computed pass and attrition rates for each rating and quality group in FY 1981, FY 1983, and FY 1985, respectively. Included are the pass rates, academic attrition rates, nonacademic attrition rates, and the number of entrants for each course in the pipelines by mental group category.

Table B-4 is a listing of the variables specified to characterize the pipelines for each rating. The first variable (RATE) is the character acronym identifying the rating. The pipeline length (in calendar days) is the next variable (PIPE_LEN). The number of courses or CDPs (NUMCDP) in the pipeline and the average length of courses in the pipeline (CDPLEN) are also used to describe the training pipeline by rating.

1. Table 3 of the main text provides a description of this sample by fiscal year and quality group.

Table B-1. A-School attrition 1981

AC		AU	AL	BU	BL	CU	CL	DU	TOTS
6278	P	0.74	0.66	0.55	0.64	0.60	0.44	0.56	0.67
	K	0.21	0.29	0.36	0.24	0.33	0.53	0.44	0.27
	L	0.06	0.06	0.09	0.12	0.07	0.03	0.00	0.07
	N	373	119	77	33	73	34	9	736
PIPE P		0.74	0.66	0.55	0.64	0.60	0.44	0.56	0.67
PIPE K		0.21	0.29	0.36	0.24	0.33	0.53	0.44	0.27
PIPE L		0.06	0.06	0.09	0.12	0.07	0.03	0.00	0.07
AT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6219	P	0.99	1.00	0.99	0.97	1.00	1.00	0.97	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.01	0.03	0.00	0.00	0.03	0.01
	N	930	275	194	61	136	115	31	1772
AND									
6230	P	0.92	0.89	0.88	0.72	0.86	0.76	0 77	0.89
	K	0.03	0.03	0.04	0.07	0.04	0.15	0.15	0.04
	L	0.05	0.08	0.09	0.21	0.09	0.08	0.08	0.07
	N	1027	293	217	67	138	110	26	1917
AND									
6239	P	0.86	0.84	0.73	0.67	0.81	0.72	0.81	0.83
	K	0.08	0.13	0.10	0.17	0.11	0.20	0.13	0.10
	L	0.06	0.03	0.16	0.17	0.08	0.08	0.06	0.07
	N	958	270	196	42	124	74	16	1713
PIPE P		0.79	0.75	0.64	0.46	0.70	0.55	0.60	0.73
PIPE K		0.10	0.14	0.12	0.19	0.14	0.31	0.24	0.13
PIPE L		0.11	0.11	0.24	0.35	0.16	0.14	0.15	0.14
AT6		AU	AL	BU	BL	CU	CL	DU	TOTS
6219	P	0.99	1.00	0.99	0.97	1.00	1.00	0.97	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.01	0.03	0.00	0.00	0.03	0.01
	N	930	275	194	61	136	115	31	1772
AND									
6230	P	0.92	0.89	0.88	0.72	0.86	0.76	0.77	0.89
	K	0.03	0.03	0.04	0.07	0.04	0.15	0.15	0.04
	L	0.05	0.08	0.09	0.21	0.09	0.08	0.08	0.07
	N	1027	293	217	67	138	110	26	1917

Definitions

AU= HSDG, AFQTI-II
AL= HSDG, AFQTIIIA
BU= NHS, AFQTI-II
BL= NHS, AFQTIIIA
CU=HSDG, AFQTIIIB
CL=HSDG, AFQTIV
DU=NHS, AFQTIIIB
P=PASS RATE
K=ACADEMIC ATTRITION
L=NONACADEMIC ATTRITION
N=NUMBER OF ENTRANTS

Estimated total attrition rates are computed from all individuals in the data set. For some students either AFQT or HSD status was not known.

Table B-1 (continued)

AND									
6239	P	0.86	0.84	0.73	0.67	0.81	0.72	0.81	0.83
	K	0.08	0.13	0.10	0.17	0.11	0.20	0.13	0.10
	L	0.06	0.03	0.16	0.17	0.08	0.08	0.06	0.07
	N	958	270	196	42	124	74	16	1713
AND									
6244	P	0.96	0.98	0.92	0.67	1.00	0.91	0.00	0.96
	K	0.01	0.02	0.05	0.00	0.00	0.00	0.00	0.01
	L	0.03	0.00	0.03	0.33	0.00	0.09	0.00	0.03
	N	353	57	38	3	28	11	0	496
PIPE P		0.76	0.73	0.59	0.31	0.70	0.50	0.00	0.70
PIPE K		0.11	0.16	0.16	0.19	0.14	0.31	0.00	0.14
PIPE L		0.13	0.11	0.26	0.50	0.16	0.19	0.00	0.16

AQ4		AU	AL	BU	BL	CU	CL	DU	TOTS
6220	P	0.99	1.00	0.97	1.00	0.98	1.00	1.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.03	0.00	0.03	0.00	0.00	0.01
	N	328	92	63	27	40	27	7	600
AND									
6231	P	0.90	0.89	0.82	0.65	0.85	0.86	0.38	0.87
	K	0.04	0.03	0.03	0.10	0.07	0.07	0.25	0.05
	L	0.05	0.08	0.15	0.26	0.07	0.07	0.38	0.09
	N	364	112	73	31	41	29	8	676
AND									
6240	P	0.81	0.77	0.65	0.60	0.72	0.70	1.00	0.77
	K	0.11	0.12	0.13	0.20	0.23	0.26	0.00	0.13
	L	0.08	0.12	0.22	0.20	0.05	0.04	0.00	0.10
	N	350	103	55	20	43	23	1	609
PIPE P		0.72	0.68	0.52	0.39	0.60	0.60	0.38	0.66
PIPE K		0.14	0.13	0.13	0.23	0.26	0.29	0.25	0.15
PIPE L		0.14	0.18	0.35	0.39	0.14	0.11	0.38	0.19

AQ6		AU	AL	BU	BL	CU	CL	DU	TOTS
6220	P	0.99	1.00	0.97	1.00	0.98	1.00	1.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.03	0.00	0.03	0.00	0.00	0.01
	N	328	92	63	27	40	27	7	600
AND									
6231	P	0.90	0.89	0.82	0.65	0.85	0.86	0.38	0.87
	K	0.04	0.03	0.03	0.10	0.07	0.07	0.25	0.05
	L	0.05	0.08	0.15	0.26	0.07	0.07	0.38	0.09
	N	364	112	73	31	41	29	8	676
AND									
6240	P	0.81	0.77	0.65	0.60	0.72	0.70	1.00	0.77
	K	0.11	0.12	0 13	0.20	0.23	0.26	0.00	0.13
	L	0.08	0.12	0.22	0.20	0.05	0.04	0.00	0.10
	N	350	103	55	20	43	23	1	609
AND									
6245	P	0.98	0.96	0.76	0.75	1.00	1.00	1.00	0.95
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.02	0.04	0.24	0.25	0.00	0.00	0.00	0.04
	N	123	23	17	4	8	5	1	181

Table B-1 (continued)

PIPE P		0.71	0.66	0.40	0.29	0.60	0.60	0.38	0.63
PIPE K		0.14	0.13	0.13	0.23	0.26	0.29	0.25	0.16
PIPE L		0.15	0.21	0.47	0.48	0.14	0.11	0.38	0.21
BT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6486	P	0.96	0.97	0.92	0.90	0.95	0.87	0.89	0.93
	K	0.00	0.01	0.01	0.01	0.02	0.06	0.01	0.02
	L	0.04	0.02	0.08	0.10	0.03	0.07	0.10	0.05
	N	601	289	145	115	199	440	83	1943
OR									
6489	P	0.00	0.00	0.00	1.00	0.80	1.00	0.00	0.94
	K	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.06
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	0	0	0	1	5	9	0	16
AND									
BT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6260	P	0.99	0.97	0.98	0.94	0.98	0.95	0.90	0.97
	K	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01
	L	0.01	0.02	0.02	0.06	0.01	0.04	0.08	0.03
	N	553	262	131	122	193	437	87	1862
PIPE P		0.95	0.94	0.90	0.85	0.93	0.83	0.80	0.90
PIPE K		0.00	0.01	0.01	0.01	0.03	0.07	0.03	0.02
PIPE L		0.05	0.04	0.09	0.15	0.04	0.10	0.17	0.08
CTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6308	P	0.92	0.93	0.88	0.67	0.86	1.00	0.00	0.92
	K	0.03	0.02	0.00	0.00	0.14	0.00	0.00	0.03
	L	0.04	0.04	0.12	0.33	0.00	0.00	0.00	0.05
	N	183	46	17	3	7	5	0	265
OR									
6257	P	0.65	0.63	0.71	1.00	0.75	0.60	0.00	0.65
	K	0.06	0.00	0.14	0.00	0.00	0.00	0.00	0.07
	L	0.29	0.38	0.14	0.00	0.25	0.40	0.00	0.28
	N	48	8	7	1	4	5	0	74
OR									
6360	P	0.85	0.91	0.67	0.00	0.80	1.00	0.00	0.84
	K	0.09	0.09	0.33	0.50	0.00	0.00	0.00	0.10
	L	0.05	0.00	0.00	0.50	0.20	0.00	0.00	0.06
	N	55	11	3	2	5	2	0	79
AND									
CTM		AU	AL	BU	BL	CU	CL	DU	TOTS
605A	P	0.92	0.92	0.96	0.33	1.00	1.00	0.00	0.92
	K	0.03	0.07	0.00	0.33	0.00	0.00	0.00	0.04
	L	0.04	0.02	0.04	0.33	0.00	0.00	0.00	0.04
	N	298	59	25	3	19	8	0	418
AND									
605B	P	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	245	54	27	2	11	3	0	348
AND									
605C	P	1.00	0.98	1.00	1.00	1.00	1.00	0.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	N	253	57	30	2	9	3	0	360

Table B-1 (continued)

AND									
6161	P	0.96	0.97	0.91	1.00	1.00	0.50	0.00	0.95
	K	0.01	0.02	0.03	0.00	0.00	0.50	0.00	0.01
	L	0.04	0.02	0.06	0.00	0.00	0.00	0.00	0.03
	N	274	61	33	2	9	2	0	388
PIPE P		0.76	0.78	0.71	0.17	0.81	0.42	0.00	0.75
PIPE K		0.08	0.10	0.10	0.33	0.06	0.42	0.00	0.09
PIPE L		0.16	0.12	0.19	0.50	0.13	0.17	0.00	0.16
DS		AU	AL	BU	BL	CU	CL	DU	TOTS
6309	P	0.94	0.87	0.79	1.00	0.83	1.00	0.00	0.92
	K	0.02	0.04	0.00	0.00	0.17	0.00	0.00	0.02
	L	0.04	0.09	0.21	0.00	0.00	0.00	0.00	0.06
	N	121	23	19	4	6	6	0	179
OR									
6269	P	0.88	0.76	0.88	0.80	0.88	0.70	1.00	0.86
	K	0.08	0.19	0.08	0.00	0.12	0.00	0.00	0.09
	L	0.04	0.05	0.04	0.20	0.00	0.30	0.00	0.05
	N	184	37	26	5	17	10	2	290
OR									
6366	P	0.89	0.83	0.89	1.00	0.88	0.90	1.00	0.89
	K	0.07	0.07	0.00	0.00	0.13	0.00	0.00	0.06
	L	0.04	0.10	0.11	0.00	0.00	0.10	0.00	0.05
	N	140	29	19	4	8	10	2	220
AND									
DS		AU	AL	BU	BL	CU	CL	DU	TOTS
6131	P	0.91	0.90	0.85	0.73	0.85	0.86	1.00	0.89
	K	0.01	0.03	0.00	0.00	0.04	0.07	0.00	0.02
	L	0.07	0.08	0.15	0.27	0.11	0.07	0.00	0.09
	N	411	79	46	11	27	14	3	608
PIPE P		0.82	0.73	0.73	0.67	0.74	0.73	1.00	0.79
PIPE K		0.07	0.13	0.03	0.00	0.16	0.06	0.00	0.08
PIPE L		0.10	0.14	0.24	0.33	0.10	0.21	0.00	0.13
EM		AU	AL	BU	BL	CU	CL	DU	TOTS
6258	P	0.84	0.73	0.55	0.37	0.72	0.68	0.47	0.75
	K	0.07	0.17	0.12	0.19	0.18	0.23	0.23	0.12
	L	0.09	0.10	0.34	0.44	0.10	0.09	0.30	0.13
	N	717	172	77	52	101	153	47	1364
OR									
6273	P	0.90	0.83	0.50	0.33	0.69	0.62	0.18	0.81
	K	0.05	0.12	0.32	0.53	0.25	0.34	0.59	0.13
	L	0.05	0.06	0.18	0.13	0.06	0.03	0.24	0.06
	N	386	52	22	15	32	29	17	566
OR									
6303	P	0.97	0.83	1.00	0.00	0.78	0.62	0.00	0.85
	K	0.03	0.11	0.00	0.00	0.22	0.31	0.00	0.12
	L	0.00	0.06	0.00	0.00	0.00	0.08	0.00	0.03
	N	32	18	2	0	9	13	0	74
AND									
EM		AU	AL	BU	BL	CU	CL	DU	TOTS
6070	P	0.97	0.97	0.87	0.88	0.94	0.88	.87	0.95
	K	0.02	0.03	0.06	0.12	0.05	0.12	0.13	0.04
	L	0.01	0.00	0.08	0.00	0.01	0.00	0.00	0.01
	N	666	178	53	33	111	94	15	1175

Table B-1 (continued)

PIPE P		0.84	0.73	0.47	0.31	0.67	0.59	0.34	0.73
PIPE K		0.07	0.18	0.19	0.31	0.24	0.33	0.38	0.15
PIPE L		0.09	0.09	0.34	0.37	0.09	0.08	0.28	0.12
ET6		AU	AL	BU	BL	CU	CL	DU	TOTS
6414	P	0.71	0.67	0.57	0.50	0.61	0.59	0.43	0.68
	K	0.18	0.25	0.24	0.44	0.29	0.30	0.29	0.21
	L	0.11	0.08	0.19	0.06	0.11	0.11	0.29	0.11
	N	585	115	88	16	38	27	7	885
OR									
6409	P	0.80	0.75	0.77	0.20	0.84	0.67	0.25	0.78
	K	0.13	0.14	0.08	0.00	0.16	0.17	0.25	0.13
	L	0.06	0.11	0.15	0.80	0.00	0.17	0.50	0.09
	N	291	57	48	5	19	6	4	432
OR									
6403	P	0.86	0.72	0.75	0.75	0.80	0.75	0.67	0.83
	K	0.05	0.11	0.08	0.13	0.10	0.10	0.33	0.06
	L	0.08	0.17	0.16	0.13	0.10	0.15	0.00	0.10
	N	584	81	61	8	30	20	3	789
AND									
ET6		AU	AL	BU	BL	CU	CL	DU	TOTS
603V	P	0.75	0.69	0.69	0.48	0.56	0.70	0.50	0.73
	K	0.15	0.14	0.15	0.24	0.33	0.20	0.25	0.16
	L	0.10	0.17	0.16	0.29	0.11	0.10	0.25	0.12
	N	1007	154	120	21	57	20	4	1396
PIPE P		0.59	0.48	0.47	0.25	0.41	0.46	0.21	0.55
PIPE K		0.23	0.28	0.25	0.40	0.44	0.34	0.39	0.26
PIPE L		0.17	0.23	0.28	0.35	0.16	0.20	0.39	0.19
ETN		AU	AL	BU	BL	CU	CL	DU	TOTS
6256	P	0.81	0.91	0.00	1.00	1.00	0.00	0.00	0.81
	K	0.13	0.09	1.00	0.00	0.00	0.00	0.00	0.13
	L	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	N	421	11	2	1	2	0	0	443
OR									
6271	P	0.92	1.00	1.00	0.00	0.00	0.00	0.00	0.92
	K	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	N	512	6	2	0	0	0	0	521
OR									
6304	P	0.96	0.95	0.50	1.00	1.00	0.00	1.00	0.95
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.03	0.05	0.50	0.00	0.00	0.00	0.00	0.04
	N	460	20	4	1	1	0	2	494
AND									
ETN		AU	AL	BU	BL	CU	CL	DU	TOTS
604E	P	0.75	0.64	0.83	0.00	1.00	0.00	0.00	0.74
	K	0.04	0.11	0.00	0.00	0.00	0.00	0.00	0.04
	L	0.22	0.25	0.17	0.00	0.00	0.00	1.00	0.22
	N	1405	36	6	0	1	0	1	1465
AND									
130D	P	0.99	0.99	0.97	1.00	1.00	0.00	0.00	0.99
	K	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.01	0.03	0.00	0.00	0.00	0.00	0.01
	N	3540	145	29	1	9	0	0	3749

Table B-1 (continued)

AND									
130E	P	0.74	0.66	0.94	0.00	0.71	0.00	0.00	0.74
	K	0.17	0.23	0.03	1.00	0.29	0.00	0.00	0.17
	L	0.09	0.11	0.03	0.00	0.00	0.00	0.00	0.09
	N	3966	155	33	1	7	0	0	4191
PIPE P		0.49	0.39	0.38	0.00	0.71	0.00	0.00	0.49
PIPE K		0.20	0.27	0.26	0.00	0.29	0.00	0.00	0.20
PIPE L		0.31	0.33	0.36	0.00	0.00	0.00	0.00	0.31
FTG		AU	AL	BU	BL	CU	CL	DU	TOTS
6248	P	0.79	0.76	0.66	0.64	0.61	0.89	0.38	0.75
	K	0.11	0.11	0.06	0.00	0.17	0.11	0.13	0.10
	L	0.10	0.13	0.28	0.36	0.22	0.00	0.50	0.15
	N	277	38	65	14	18	9	8	437
OR									
6359	P	0.83	0.77	0.81	0.67	0.67	1.00	0.00	0.81
	K	0.08	0.12	0.14	0.33	0.17	0.00	0.00	0.11
	L	0.09	0.12	0.05	0.00	0.17	0.00	0.00	0.08
	N	113	26	21	6	6	6	0	179
OR									
6310	P	0.87	1.00	0.33	0.33	0.50	1.00	0.00	0.79
	K	0.09	0.00	0.00	0.67	0.50	0.00	0.00	0.13
	L	0.04	0.00	0.67	0.00	0.00	0.00	0.00	0.08
	N	23	6	3	3	2	1	0	38
AND									
FTG		AU	AL	BU	BL	CU	CL	DU	TOTS
6377	P	0.97	0.91	0.97	1.00	1.00	1.00	1.00	0.97
	K	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.02	0.04	0.03	0.00	0.00	0.00	0.00	0.02
	N	258	46	58	12	14	7	1	401
AND									
6376	P	1.00	1.00	0.92	1.00	1.00	1.00	1.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.01
	N	162	31	36	1	8	3	1	245
PIPE P		0.78	0.72	0.61	0.61	0.62	0.94	0.38	0.74
PIPE K		0.11	0.13	0.08	0.17	0.19	0.06	0.13	0.11
PIPE L		0.11	0.15	0.31	0.22	0.19	0.00	0.50	0.15
FTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6249	P	0.79	0.69	0.74	0.75	0.67	0.89	1.00	0.77
	K	0.10	0.04	0.00	0.13	0.27	0.11	0.00	0.09
	L	0.11	0.27	0.26	0.13	0.07	0.00	0.00	0.14
	N	247	49	42	8	15	9	1	377
OR									
6358	P	0.82	0.75	0.71	0.20	1.00	0.83	0.00	0.79
	K	0.07	0.25	0.00	0.40	0.00	0.00	0.00	0.09
	L	0.10	0.00	0.29	0.40	0.00	0.17	0.00	0.12
	N	108	16	14	5	6	6	0	155
OR									
6311	P	0.83	0.89	0.33	0.00	1.00	1.00	1.00	0.81
	K	0.04	0.11	0.67	1.00	0.00	0.00	0.00	0.12
	L	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	N	24	9	3	1	3	2	1	43

Table B-1 (continued)

AND FTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6027	P	0.98	1.00	0.97	1.00	1.00	1.00	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.02
	N	259	53	36	3	13	11	1	379
AND									
6108	P	0.99	0.98	0.94	1.00	1.00	0.86	1.00	0.98
	K	0.00	0.02	0.00	0.00	0.00	0.14	0.00	0.01
	L	0.01	0.00	0.06	0.00	0.00	0.00	0.00	0.01
	N	217	47	34	4	12	7	2	329
PIPE P		0.78	0.71	0.65	0.50	0.79	0.76	1.00	0.75
PIPE K		0.09	0.11	0.03	0.29	0.17	0.18	0.00	0.10
PIPE L		0.13	0.18	0.31	0.21	0.04	0.06	0.00	0.15

HM		AU	AL	BU	BL	CU	CL	DU	TOTS
6084	P	0.97	0.96	0.94	0.86	0.96	0.90	0.80	0.94
	K	0.01	0.01	0.01	0.02	0.01	0.05	0.10	0.02
	L	0.02	0.02	0.05	0.11	0.03	0.05	0.10	0.03
	N	954	483	141	88	373	473	70	2640
OR									
6085	P	0.97	0.93	0.95	0.89	0.96	0.92	0.83	0.94
	K	0.01	0.02	0.01	0.04	0.01	0.04	0.06	0.02
	L	0.02	0.05	0.04	0.07	0.03	0.05	0.10	0.04
	N	473	344	103	84	269	301	78	1702
PIPE P		0.97	0.95	0.95	0.88	0.96	0.91	0.82	0.94
PIPE K		0.01	0.02	0.01	0.03	0.01	0.05	0.08	0.02
PIPE L		0.02	0.03	0.05	0.09	0.03	0.05	0.10	0.04

MM4		AU	AL	BU	BL	CU	CL	DU	TOTS
6492	P	0.98	0.95	0.90	0.86	0.94	0.92	0.84	0.93
	K	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.02
	L	0.02	0.04	0.10	0.14	0.05	0.04	0.13	0.05
	N	846	332	193	219	288	827	188	3050
OR									
6493	P	0.99	1.00	1.00	1.00	1.00	1.00	0.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	1789	81	5	1	12	10	0	1903
AND									
MM4		AU	AL	BU	BL	CU	CL	DU	TOTS
6262	P	0.99	0.99	0.98	0.94	0.97	0.94	0.89	0.97
	K	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01
	L	0.01	0.01	0.02	0.06	0.02	0.03	0.09	0.02
	N	2243	367	168	206	281	828	184	4435
PIPE P		0.98	0.95	0.88	0.81	0.91	0.87	0.75	0.93
PIPE K		0.00	0.01	0.00	0.00	0.02	0.06	0.05	0.02
PIPE L		0.02	0.04	0.12	0.19	0.07	0.07	0.21	0.05

Table B-1 (continued)

MS		AU	AL	BU	BL	CU	CL	DU	TOTS
6125	P	0.99	0.98	0.99	0.97	0.98	0.99	0.96	0.98
	K	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
	L	0.00	0.02	0.01	0.03	0.02	0.01	0.04	0.01
	N	353	326	125	173	318	842	154	2462
PIPE P		0.99	0.98	0.99	0.97	0.98	0.99	0.96	0.98
PIPE K		0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
PIPE L		0.00	0.02	0.01	0.03	0.02	0.01	0.04	0.01

AE		AU	AL	BU	BL	CU	CL	DU	TOTS
6218	P	0.99	1.00	1.00	0.99	1.00	0.98	0.98	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.00	0.01	0.00	0.02	0.02	0.01
	N	339	224	118	87	172	221	51	1247
AND									
6235	P	0.90	0.80	0.79	0.56	0.75	0.76	0.55	0.78
	K	0.04	0.09	0.06	0.12	0.15	0.14	0.18	0.10
	L	0.07	0.12	0.15	0.32	0.10	0.09	0.27	0.12
	N	380	270	140	101	194	225	60	1412
AND									
6515	P	0.96	0.96	0.86	0.89	0.88	0.88	0.86	0.92
	K	0.01	0.03	0.05	0.06	0.09	0.10	0.11	0.05
	L	0.03	0.02	0.09	0.05	0.02	0.03	0.03	0.03
	N	349	259	119	66	162	152	35	1172
PIPE P		0.85	0.76	0.68	0.50	0.66	0.66	0.46	0.71
PIPE K		0.05	0.11	0.10	0.15	0.22	0.21	0.24	0.14
PIPE L		0.10	0.13	0.22	0.35	0.12	0.13	0.30	0.15

EW4		AU	AL	BU	BL	CU	CL	DU	TOTS
6254	P	0.61	0.36	0.37	0.40	0.57	0.00	0.00	0.50
	K	0.05	0.14	0.14	0.20	0.14	0.00	1.00	0.10
	L	0.34	0.50	0.49	0.40	0.29	1.00	0.00	0.40
	N	79	14	49	5	7	1	1	158
OR									
6275	P	0.88	0.80	0.75	0.67	1.00	0.75	0.00	0.84
	K	0.06	0.00	0.21	0.33	0.00	0.25	1.00	0.10
	L	0.05	0.20	0.04	0.00	0.00	0.00	0.00	0.06
	N	95	15	28	3	8	4	2	156
OR									
6306	P	0.89	0.89	0.88	0.77	0.92	0.83	0.75	0.88
	K	0.05	0.00	0.03	0.08	0.08	0.17	0.25	0.05
	L	0.06	0.11	0.09	0.15	0.00	0.00	0.00	0.07
	N	211	36	67	13	12	6	4	353
AND									
EW4		AU	AL	BU	BL	CU	CL	DU	TOTS
602A	P	0.99	1.00	1.00	1.00	1.00	0.00	1.00	0.99
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	78	22	25	6	3	0	1	136
AND									
602B	P	0.93	0.93	0.88	0.78	0.75	1.00	1.00	0.91
	K	0.03	0.04	0.09	0.00	0.19	0.00	0.00	0.04
	L	0.04	0.03	0.04	0.22	0.06	0.00	0.00	0.04
	N	346	67	112	18	16	7	4	579

Table B-1 (continued)

AND									
602C	P	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	N	260	67	73	11	8	3	2	432
AND									
602D	P	0.98	0.98	0.95	1.00	1.00	1.00	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.02	0.05	0.00	0.00	0.00	0.00	0.02
	N	222	56	62	12	8	2	1	368
PIPE P		0.75	0.67	0.57	0.52	0.64	0.00	0.43	0.69
PIPE K		0.09	0.06	0.16	0.14	0.23	0.00	0.57	0.12
PIPE L		0.16	0.26	0.27	0.34	0.13	0.00	0.00	0.20
EW6		AU	AL	BU	BL	CU	CL	DU	TOTS
6254	P	0.61	0.36	0.37	0.40	0.57	0.00	0.00	0.50
	K	0.05	0.14	0.14	0.20	0.14	0.00	1.00	0.10
	L	0.34	0.50	0.49	0.40	0.29	1.00	0.00	0.40
	N	79	14	49	5	7	1	1	158
OR									
6275	P	0.88	0.80	0.75	0.67	1.00	0.75	0.00	0.84
	K	0.06	0.00	0.21	0.33	0.00	0.25	1.00	0.10
	L	0.05	0.20	0.04	0.00	0.00	0.00	0.00	0.06
	N	95	15	28	3	8	4	2	156
OR									
6306	P	0.89	0.89	0.88	0.77	0.92	0.83	0.75	0.88
	K	0.05	0.00	0.03	0.08	0.08	0.17	0.25	0.05
	L	0.06	0.11	0.09	0.15	0.00	0.00	0.00	0.07
	N	211	36	67	13	12	6	4	353
AND									
EW6		AU	AL	BU	BL	CU	CL	DU	TOTS
602A	P	0.99	1.00	1.00	1.00	1.00	0.00	1.00	0.99
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	78	22	25	6	3	0	1	136
AND									
602B	P	0.93	0.93	0.88	0.78	0.75	1.00	1.00	0.91
	K	0.03	0.04	0.09	0.00	0.19	0.00	0.00	0.04
	L	0.04	0.03	0.04	0.22	0.06	0.00	0.00	0.04
	N	346	67	112	18	16	7	4	579
AND									
602C	P	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	N	260	67	73	11	8	3	2	432
AND									
602D	P	0.98	0.98	0.95	1.00	1.00	1.00	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.02	0.05	0.00	0.00	0.00	0.00	0.02
	N	222	56	62	12	8	2	1	368
AND									
603A	P	0.99	0.98	0.98	1.00	0.89	1.00	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.01
	L	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.01
	N	208	45	41	5	9	4	2	318
AND									
603B	P	0.98	1.00	1.00	1.00	1.00	1.00	1.00	0.99
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	195	50	32	4	10	1	3	298

Table B-1 (continued)

PIPE P		0.73	0.66	0.55	0.52	0.57	0.00	0.43	0.67
PIPE K		0.10	0.06	0.16	0.14	0.30	0.00	0.57	0.12
PIPE L		0.18	0.28	0.28	0.34	0.13	0.00	0.00	0.21
EO		AU	AL	BU	BL	CU	CL	DU	TOTS
6097	P	0.97	1.00	0.86	1.00	1.00	0.98	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.03	0.00	0.14	0.00	0.00	0.02	0.00	0.02
	N	33	21	14	6	27	51	11	171
OR									
6292	P	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	47	46	13	10	31	82	13	255
PIPE P		0.98	1.00	0.93	1.00	1.00	0.99	1.00	0.99
PIPE K		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPE L		0.03	0.00	0.07	0.00	0.00	0.01	0.00	0.01
OS		AU	AL	BU	BL	CU	CL	DU	TOTS
6540	P	0.97	0.93	0.89	0.86	0.95	0.86	0.83	0.92
	K	0.00	0.03	0.01	0.04	0.01	0.05	0.02	0.02
	L	0.02	0.04	0.10	0.11	0.04	0.08	0.15	0.06
	N	829	472	347	250	215	169	96	2423
PIPE P		0.97	0.93	0.89	0.86	0.95	0.86	0.83	0.92
PIPE K		0.00	0.03	0.01	0.04	0.01	0.05	0.02	0.02
PIPE L		0.02	0.04	0.10	0.11	0.04	0.08	0.15	0.06
EO		AU	AL	BU	BL	CU	CL	DU	TOTS
6097	P	0.97	1.00	0.86	1.00	1.00	0.98	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.03	0.00	0.14	0.00	0.00	0.02	0.00	0.02
	N	33	21	14	6	27	51	11	171
OR									
6292	P	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	47	46	13	10	31	82	13	255
PIPE P		0.98	1.00	0.93	1.00	1.00	0.99	1.00	0.99
PIPE K		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPE L		0.03	0.00	0.07	0.00	0.00	0.01	0.00	0.01

Table B-1 (continued)

OS		AU	AL	BU	BL	CU	CL	DU	TOTS
6540	P	0.97	0.93	0.89	0.86	0.95	0.86	0.83	0.92
	K	0.00	0.03	0.01	0.04	0.01	0.05	0.02	0.02
	L	0.02	0.04	0.10	0.11	0.04	0.08	0.15	0.06
	N	829	472	347	250	215	169	96	2423
PIPE P		0.97	0.93	0.89	0.86	0.95	0.86	0.83	0.92
PIPE K		0.00	0.03	0.01	0.04	0.01	0.05	0.02	0.02
PIPE L		0.02	0.04	0.10	0.11	0.04	0.08	0.15	0.06

RM		AU	AL	BU	BL	CU	CL	DU	TOTS
6380	P	0.99	0.96	0.94	0.91	0.98	0.97	0.92	0.97
	K	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.01
	L	0.01	0.03	0.05	0.09	0.01	0.02	0.08	0.02
	N	245	225	65	67	263	526	61	1507
OR									
6381	P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	71	62	15	24	125	417	22	774
AND									
RM		AU	AL	BU	BL	CU	CL	DU	TOTS
6144	P	0.94	0.94	0.87	0.87	0.97	0.94	0.85	0.93
	K	0.00	0.00	0.01	0.03	0.00	0.01	0.01	0.01
	L	0.06	0.06	0.13	0.10	0.03	0.05	0.14	0.06
	N	437	281	112	93	322	1017	88	2477
PIPE P		0.93	0.91	0.82	0.81	0.95	0.93	0.80	0.91
PIPE K		0.00	0.01	0.02	0.03	0.01	0.02	0.01	0.01
PIPE L		0.07	0.08	0.16	0.16	0.04	0.05	0.19	0.07

SK		AU	AL	BU	BL	CU	CL	DU	TOTS
6059	P	1.00	0.99	0.95	0.90	0.93	0.96	0.88	0.96
	K	0.00	0.00	0.00	0.01	0.02	0.02	0.06	0.01
	L	0.00	0.01	0.05	0.09	0.05	0.02	0.06	0.03
	N	186	164	64	78	99	105	32	738
PIPE P		1.00	0.99	0.95	0.90	0.93	0.96	0.88	0.96
PIPE K		0.00	0.00	0.00	0.01	0.02	0.02	0.06	0.01
PIPE L		0.00	0.01	0.05	0.09	0.05	0.02	0.06	0.03

HT		AU	AL	BU	BL	CU	CL	DU	TOTS
6119	P	0.99	1.00	0.98	0.95	0.99	0.99	1.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.02	0.05	0.01	0.01	0.00	0.01
	N	187	113	57	38	95	77	28	614
OR									
6120	P	0.96	0.95	0.94	0.88	0.97	0.99	1.00	0.96
	K	0.00	0.02	0.00	0.04	0.02	0.00	0.00	0.01
	L	0.04	0.03	0.06	0.08	0.01	0.01	0.00	0.03
	N	238	158	64	52	113	137	40	823

Table B-1 (continued)

AND HT		AU	AL	BU	BL	CU	CL	DU	TOTS
6106	P	0.98	1.00	0.94	0.87	0.98	0.94	0.94	0.97
	K	0.01	0.00	0.00	0.05	0.02	0.04	0.00	0.01
	L	0.02	0.00	0.06	0.08	0.00	0.01	0.06	0.02
	N	178	121	52	38	89	70	17	582
OR									
6339	P	0.96	0.94	0.90	0.86	0.88	0.92	0.73	0.91
	K	0.00	0.00	0.01	0.00	0.02	0.04	0.03	0.02
	L	0.03	0.06	0.08	0.14	0.10	0.04	0.24	0.08
	N	270	172	83	71	137	166	63	999
PIPE P		0.94	0.94	0.88	0.79	0.90	0.91	0.77	0.90
PIPE K		0.00	0.01	0.01	0.04	0.03	0.04	0.03	0.02
PIPE L		0.05	0.05	0.11	0.18	0.07	0.05	0.20	0.08

Table B-2. A-School attrition 1983

AC		AU	AL	BU	BL	CU	CL	DU	TOTS
6278	P	0.70	0.64	0.66	0.47	0.54	0.54	0.50	0.65
	K	0.20	0.28	0.13	0.24	0.39	0.39	0.38	0.25
	L	0.10	0.08	0.21	0.29	0.07	0.07	0.13	0.10
	N	365	121	47	17	74	54	8	696
PIPE P		0.70	0.64	0.66	0.47	0.54	0.54	0.50	0.65
PIPE K		0.20	0.28	0.13	0.24	0.39	0.39	0.38	0.25
PIPE L		0.10	0.08	0.21	0.29	0.07	0.07	0.13	0.10

AT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6219	P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	1283	239	172	40	86	60	16	1897
AND									
6230	P	0.95	0.92	0.86	0.85	0.88	0.91	0.65	0.92
	K	0.02	0.04	0.07	0.04	0.09	0.03	0.30	0.04
	L	0.03	0.04	0.07	0.11	0.03	0.06	0.05	0.04
	N	975	222	191	46	96	68	20	1629
AND									
6239	P	0.94	0.90	0.85	0.87	0.92	0.85	0.77	0.92
	K	0.02	0.04	0.01	0.02	0.05	0.07	0.08	0.03
	L	0.04	0.06	0.14	0.11	0.02	0.08	0.15	0.06
	N	1000	221	177	45	92	75	13	1638
PIPE P		0.89	0.84	0.73	0.73	0.81	0.78	0.50	0.85
PIPE K		0.04	0.07	0.08	0.06	0.14	0.09	0.35	0.06
PIPE L		0.07	0.09	0.19	0.20	0.05	0.13	0.15	0.09

AT6		AU	AL	BU	BL	CU	CL	DU	TOTS
6219	P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	1283	239	172	40	86	60	16	1897
AND									
6230	P	0.95	0.92	0.86	0.85	0.88	0.91	0.65	0.92
	K	0.02	0.04	0.07	0.04	0.09	0.03	0.30	0.04
	L	0.03	0.04	0.07	0.11	0.03	0.06	0.05	0.04
	N	975	222	191	46	96	68	20	1629
AND									
6239	P	0.94	0.90	0.85	0.87	0.92	0.85	0.77	0.92
	K	0.02	0.04	0.01	0.02	0.05	0.07	0.08	0.03
	L	0.04	0.06	0.14	0.11	0.02	0.08	0.15	0.06
	N	1000	221	177	45	92	75	13	1638

Definitions

AU= HSDG,AFQTI-II
AL= HSDG,AFQTIIIA
BU= NHS,AFQTI-II
BL= NHS,AFQTIIIA
CU=HSDG,AFQTIIIB
CL=HSDG,AFQTIV
DU=NHS,AFQTIIIB

P=PASS RATE
K=ACADEMIC ATTRITION
L=NONACADEMIC ATTRITION
N=NUMBER OF ENTRANTS

Estimated total attrition rates are computed from all individuals in the data set. For some students either AFQT or HSD status was not known.

Table B-2 (continued)

AND									
6244	P	0.97	0.98	0.91	0.86	1.00	1.00	0.00	0.97
	K	0.01	0.02	0.00	0.14	0.00	0.00	0.00	0.01
	L	0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.02
	N	400	49	34	7	15	3	0	509
PIPE P		0.87	0.82	0.67	0.63	0.81	0.78	0.00	0.82
PIPE K		0.05	0.09	0.08	0.17	0.14	0.09	0.00	0.07
PIPE L		0.08	0.09	0.25	0.20	0.05	0.13	0.00	0.11
AQ4		AU	AL	BU	BL	CU	CL	DU	TOTS
6220	P	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	N	410	156	76	16	60	32	11	764
AND									
6231	P	0.90	0.85	0.87	0.72	0.80	0.82	0.70	0.87
	K	0.05	0.14	0.06	0.22	0.20	0.14	0.20	0.09
	L	0.04	0.01	0.07	0.06	0.00	0.04	0.10	0.04
	N	319	118	68	18	46	28	10	611
AND									
6240	P	0.92	0.93	0.84	0.83	0.89	0.82	0.82	0.90
	K	0.03	0.05	0.03	0.11	0.09	0.04	0.09	0.04
	L	0.05	0.02	0.13	0.06	0.02	0.14	0.09	0.05
	N	319	120	69	18	45	28	11	615
PIPE P		0.83	0.79	0.72	0.60	0.71	0.67	0.57	0.78
PIPE K		0.08	0.19	0.08	0.30	0.27	0.17	0.26	0.13
PIPE L		0.09	0.02	0.20	0.10	0.02	0.15	0.16	0.09
AQ6		AU	AL	BU	BL	CU	CL	DU	TOTS
6220	P	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	N	410	156	76	16	60	32	11	764
AND									
6231	P	0.90	0.85	0.87	0.72	0.80	0.82	0.70	0.87
	K	0.05	0.14	0.06	0.22	0.20	0.14	0.20	0.09
	L	0.04	0.01	0.07	0.06	0.00	0.04	0.10	0.04
	N	319	118	68	18	46	28	10	611
AND									
6240	P	0.92	0.93	0.84	0.83	0.89	0.82	0.82	0.90
	K	0.03	0.05	0.03	0.11	0.09	0.04	0.09	0.04
	L	0.05	0.02	0.13	0.06	0.02	0.14	0.09	0.05
	N	319	120	69	18	45	28	11	615
AND									
6245	P	0.95	0.89	0.83	1.00	1.00	1.00	1.00	0.93
	K	0.03	0.11	0.17	0.00	0.00	0.00	0.00	0.05
	L	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	91	28	6	1	6	2	1	135
PIPE P		0.79	0.71	0.60	0.60	0.71	0.67	0.57	0.73
PIPE K		0.11	0.27	0.20	0.30	0.27	0.17	0.26	0.17
PIPE L		0.10	0.02	0.20	0.10	0.02	0.15	0.16	0.10

Table B-2 (continued)

BT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6260	P	0.98	0.96	0.97	0.95	0.95	0.88	0.89	0.93
	K	0.00	0.02	0.00	0.02	0.02	0.09	0.02	0.04
	L	0.02	0.02	0.03	0.04	0.03	0.02	0.09	0.03
	N	515	181	93	56	175	613	55	1727
AND									
6486	P	0.99	0.95	0.95	0.81	0.94	0.94	0.85	0.95
	K	0.00	0.02	0.00	0.02	0.01	0.04	0.03	0.02
	L	0.01	0.03	0.05	0.17	0.05	0.02	0.11	0.04
	N	485	180	97	58	160	555	61	1639
PIPE P		0.96	0.91	0.92	0.77	0.90	0.83	0.76	0.88
PIPE K		0.00	0.03	0.00	0.03	0.02	0.12	0.05	0.06
PIPE L		0.03	0.05	0.08	0.20	0.08	0.05	0.19	0.06

BT6		AU	AL	BU	BL	CU	CL	DU	TOTS
6260	P	0.98	0.96	0.97	0.95	0.95	0.88	0.89	0.93
	K	0.00	0.02	0.00	0.02	0.02	0.09	0.02	0.04
	L	0.02	0.02	0.03	0.04	0.03	0.02	0.09	0.03
	N	515	181	93	56	175	613	55	1727
AND									
6486	P	0.99	0.95	0.95	0.81	0.94	0.94	0.85	0.95
	K	0.00	0.02	0.00	0.02	0.01	0.04	0.03	0.02
	L	0.01	0.03	0.05	0.17	0.05	0.02	0.11	0.04
	N	485	180	97	58	160	555	61	1639
AND									
6488	P	0.96	0.92	0.84	0.91	0.80	1.00	1.00	0.94
	K	0.02	0.02	0.00	0.09	0.20	0.00	0.00	0.02
	L	0.03	0.06	0.16	0.00	0.00	0.00	0.00	0.04
	N	332	52	37	11	5	2	3	442
PIPE P		0.92	0.84	0.77	0.70	0.72	0.83	0.76	0.83
PIPE K		0.02	0.05	0.00	0.10	0.20	0.12	0.05	0.07
PIPE L		0.06	0.11	0.23	0.20	0.08	0.05	0.19	0.10

CTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6308	P	0.95	0.91	0.88	0.00	0.83	1.00	0.00	0.93
	K	0.02	0.07	0.00	0.00	0.13	0.00	0.00	0.04
	L	0.02	0.02	0.13	0.00	0.04	0.00	0.00	0.03
	N	201	55	8	0	24	9	0	297
AND									
605A	P	0.91	0.90	1.00	0.00	0.96	1.00	0.00	0.92
	K	0.04	0.02	0.00	0.00	0.04	0.00	0.00	0.03
	L	0.05	0.08	0.00	0.00	0.00	0.00	0.00	0.05
	N	188	50	7	0	26	10	0	281
AND									
605B	P	0.99	1.00	1.00	1.00	1.00	1.00	0.00	1.00
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	161	46	8	1	22	10	0	248
AND									
605C	P	0.99	1.00	1.00	1.00	0.96	1.00	0.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.00	0.00	0.04	0.00	0.00	0.01
	N	161	44	8	1	23	10	0	247

Table B-2 (continued)

AND									
6161	P	0.92	1.00	1.00	1.00	1.00	1.00	0.00	0.95
	K	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	N	175	47	7	2	19	12	0	262
PIPE P		0.79	0.82	0.88	0.00	0.77	1.00	0.00	0.80
PIPE K		0.08	0.09	0.00	0.00	0.16	0.00	0.00	0.08
PIPE L		0.13	0.09	0.13	0.00	0.08	0.00	0.00	0.11
DS		AU	AL	BU	BL	CU	CL	DU	TOTS
6269	P	0.90	0.88	0.85	0.57	0.84	1.00	0.67	0.89
	K	0.03	0.10	0.05	0.00	0.11	0.00	0.33	0.05
	L	0.07	0.02	0.10	0.43	0.05	0.00	0.00	0.06
	N	459	101	39	7	44	15	3	684
OR									
6309	P	0.94	1.00	1.00	0.50	1.00	1.00	0.00	0.93
	K	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.03
	L	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.03
	N	18	1	4	2	2	1	0	29
AND									
DS		AU	AL	BU	BL	CU	CL	DU	TOTS
6131	P	0.87	0.77	0.73	0.57	0.77	0.72	0.60	0.83
	K	0.08	0.10	0.13	0.29	0.06	0.17	0.20	0.09
	L	0.05	0.13	0.15	0.14	0.17	0.11	0.20	0.08
	N	446	77	48	7	47	18	5	670
PIPE P		0.79	0.68	0.63	0.32	0.65	0.72	0.40	0.74
PIPE K		0.10	0.19	0.15	0.27	0.16	0.17	0.47	0.13
PIPE L		0.11	0.13	0.22	0.41	0.19	0.11	0.13	0.13
EM		AU	AL	BU	BL	CU	CL	DU	TOTS
6258	P	0.90	0.80	0.73	0.77	0.79	0.82	0.64	0.81
	K	0.07	0.10	0.00	0.15	0.14	0.14	0.09	0.11
	L	0.03	0.10	0.27	0.08	0.07	0.04	0.27	0.07
	N	61	30	11	13	29	85	11	254
OR									
6273	P	0.84	0.62	0.58	0.38	0.77	0.67	0.33	0.71
	K	0.11	0.31	0.42	0.38	0.19	0.21	0 67	0.23
	L	0.05	0.08	0.00	0.25	0.04	0.12	0.00	0.07
	N	81	52	12	8	52	33	3	244
OR									
6303	P	0.84	0.78	0.81	0.50	0.77	0.77	0.50	0.79
	K	0.08	0.12	0.15	0.43	0.16	0.18	0.40	0.14
	L	0.08	0.10	0.04	0.07	0.07	0.05	0.10	0.07
	N	173	132	47	14	101	101	10	579
AND									
EM		AU	AL	BU	BL	CU	CL	DU	TOTS
6070	P	0.91	0.88	0.91	1.00	0.90	0.85	0.83	0.89
	K	0.06	0.10	0.07	0.00	0.10	0.14	0.17	0.09
	L	0.03	0.02	0.02	0.00	0.00	0.01	0.00	0.02
	N	232	148	55	25	124	170	23	791

Table B-2 (continued)

PIPE P		0.77	0.65	0.69	0.57	0.69	0.66	0.45	0.69
PIPE K		0.14	0.24	0.23	0.31	0.25	0.28	0.39	0.22
PIPE L		0.09	0.11	0.09	0.11	0.06	0.06	0.17	0.09
EMN		AU	AL	BU	BL	CU	CL	DU	TOTS
605U	P	0.98	0.96	0.67	0.00	1.00	1.00	1.00	0.98
	K	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.33	0.00	0.00	0.00	0.00	0.01
	N	1287	23	3	0	5	2	2	1322
AND									
605Y	P	0.98	1.00	1.00	0.00	1.00	1.00	1.00	0.98
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	1397	33	4	0	3	4	1	1442
AND									
130D	P	0.98	0.99	1.00	0.00	1.00	1.00	0.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.02
	N	2559	71	5	0	12	1	0	2651
AND									
130E	P	0.72	0.61	0.38	0.00	0.67	1.00	0.00	0.72
	K	0.19	0.28	0.50	0.00	0.27	0.00	0.00	0.20
	L	0.08	0.11	0.13	0.00	0.07	0.00	0.00	0.08
	N	4571	101	8	0	15	2	0	4702
PIPE P		0.68	0.58	0.25	0.00	0.67	1.00	0.00	0.68
PIPE K		0.20	0.30	0.33	0.00	0.27	0.00	0.00	0.20
PIPE L		0.12	0.12	0.42	0.00	0.07	0.00	0.00	0.12
ET6		AU	AL	BU	BL	CU	CL	DU	TOTS
6403	P	0.89	0.85	0.62	0.60	0.71	0.83	0.67	0.87
	K	0.05	0.09	0.14	0.20	0.18	0.17	0.00	0.07
	L	0.06	0.06	0.24	0.20	0.12	0.00	0.33	0.07
	N	702	94	42	5	17	12	3	876
OR									
6409	P	0.79	0.80	0.68	0.75	0.68	1.00	0.50	0.78
	K	0.13	0.15	0.21	0.00	0.32	0.00	0.50	0.15
	L	0.08	0.05	0.11	0.25	0.00	0.00	0.00	0.08
	N	512	61	38	4	25	3	4	647
OR									
6414	P	0.89	0.88	0.89	0.62	0.71	0.75	0.67	0.87
	K	0.07	0.06	0.02	0.23	0.18	0.23	0.00	0.08
	L	0.04	0.06	0.09	0.15	0.11	0.02	0.33	0.05
	N	753	114	54	13	62	44	3	1062
AND									
ET6		AU	AL	BU	BL	CU	CL	DU	TOTS
603V	P	0.74	0.68	0.72	0.35	0.60	0.54	0.38	0.72
	K	0.13	0.21	0.08	0.24	0.19	0.27	0.25	0.14
	L	0.13	0.11	0.20	0.41	0.21	0.19	0.38	0.14
	N	1489	213	105	17	70	52	8	1968
PIPE P		0.64	0.58	0.54	0.22	0.42	0.42	0.23	0.61
PIPE K		0.19	0.27	0.17	0.33	0.34	0.41	0.35	0.21
PIPE L		0.17	0.16	0.29	0.44	0.24	0.17	0.43	0.18

Table B-2 (continued)

ETN		AU	AL	BU	BL	CU	CL	DU	TOTS
6256	P	0.95	0.85	1.00	0.00	0.00	0.00	0.00	0.95
	K	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.03	0.15	0.00	0.00	0.00	0.00	0.00	0.03
	N	1209	13	1	0	0	0	0	1223
AND									
604E	P	0.80	0.63	1.00	0.00	0.00	0.00	0.00	0.80
	K	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.18	0.38	0.00	0.00	0.00	0.00	0.00	0.19
	N	1229	16	1	0	0	0	0	1246
AND									
130D	P	0.98	0.99	1.00	0.00	1.00	1.00	0.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.02
	N	2559	71	5	0	12	1	0	2651
AND									
130E	P	0.72	0.61	0.38	0.00	0.67	1.00	0.00	0.72
	K	0.19	0.28	0.50	0.00	0.27	0.00	0.00	0.20
	L	0.08	0.11	0.13	0.00	0.07	0.00	0.00	0.08
	N	4571	101	8	0	15	2	0	4702
PIPE P		0.54	0.32	0.38	0.00	0.00	0.00	0.00	0.53
PIPE K		0.18	0.14	0.50	0.00	0.00	0.00	0.00	0.18
PIPE L		0.29	0.54	0.13	0.00	0.00	0.00	0.00	0.29

FTG		AU	AL	BU	BL	CU	CL	DU	TOTS
6248	P	0.90	0.81	0.67	0.50	0.78	1.00	1.00	0.86
	K	0.07	0.19	0.08	0.50	0.11	0.00	0.00	0.09
	L	0.03	0.00	0.25	0.00	0.11	0.00	0.00	0.05
	N	100	21	12	2	9	4	1	153
OR									
6359	P	0.88	0.64	0.89	0.00	0.33	1.00	0.00	0.84
	K	0.08	0.27	0.00	0.00	0.67	0.00	0.00	0.11
	L	0.04	0.09	0.11	0.00	0.00	0.00	0.00	0.05
	N	75	11	9	0	3	2	0	100
OR									
6310	P	0.92	0.87	0.91	1.00	0.90	1.00	1.00	0.91
	K	0.04	0.00	0.05	0.00	0.10	0.00	0.00	0.03
	L	0.05	0.13	0.05	0.00	0.00	0.00	0.00	0.06
	N	196	39	22	1	10	2	1	272
AND									
FTG		AU	AL	BU	BL	CU	CL	DU	TOTS
6377	P	0.97	0.94	0.97	0.83	0.67	1.00	1.00	0.95
	K	0.02	0.03	0.03	0.17	0.17	0.00	0.00	0.03
	L	0.01	0.03	0.00	0.00	0.17	0.00	0.00	0.02
	N	227	32	31	6	12	11	6	329
AND									
6376	P	0.97	0.93	0.88	1.00	1.00	0.89	0.80	0.95
	K	0.03	0.03	0.00	0.00	0.00	0.11	0.00	0.03
	L	0.00	0.03	0.12	0.00	0.00	0.00	0.20	0.02
	N	260	30	41	6	11	9	5	365
PIPE P		0.85	0.71	0.71	0.56	0.52	0.89	0.80	0.80
PIPE K		0.10	0.15	0.07	0.44	0.31	0.11	0.00	0.11
PIPE L		0.05	0.14	0.22	0.00	0.17	0.00	0.20	0.08

Table B-2 (continued)

FTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6249	P	0.91	0.80	0.78	0.50	0.74	1.00	1.00	0.87
	K	0.07	0.16	0.13	0.25	0.05	0.00	0.00	0.09
	L	0.02	0.05	0.09	0.25	0.21	0.00	0.00	0.05
	N	213	44	32	4	19	2	1	317
OR									
6358	P	0.88	0.78	1.00	1.00	0.74	0.00	0.00	0.86
	K	0.06	0.17	0.00	0.00	0.11	0.00	0.00	0.08
	L	0.06	0.04	0.00	0.00	0.16	0.00	0.00	0.07
	N	145	23	7	1	19	0	0	198
OR									
6311	P	0.93	1.00	0.69	1.00	0.92	1.00	1.00	0.93
	K	0.03	0.00	0.13	0.00	0.08	0.00	0.00	0.03
	L	0.04	0.00	0.19	0.00	0.00	0.00	0.00	0.04
	N	183	21	16	2	12	5	1	240
AND									
FTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6027	P	0.99	1.00	0.94	1.00	1.00	1.00	1.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.06	0.00	0.00	0.00	0.00	0.01
	N	232	45	18	9	18	6	1	329
AND									
6108	P	0.98	0.96	0.94	1.00	0.92	0.80	1.00	0.97
	K	0.01	0.04	0.00	0.00	0.08	0.00	0.00	0.02
	L	0.01	0.00	0.06	0.00	0.00	0.20	0.00	0.02
	N	272	45	31	8	13	5	1	378
PIPE P		0.88	0.80	0.69	0.71	0.72	0.80	1.00	0.84
PIPE K		0.07	0.16	0.11	0.14	0.14	0.00	0.00	0.08
PIPE L		0.06	0.03	0.20	0.14	0.14	0.20	0.00	0.07
HM		AU	AL	BU	BL	CU	CL	DU	TOTS
6084	P	0.98	0.96	0.85	0.85	0.97	0.95	0.91	0.96
	K	0.00	0.01	0.00	0.02	0.00	0.02	0.03	0.01
	L	0.02	0.04	0.15	0.12	0.03	0.03	0.06	0.03
	N	941	399	88	41	316	423	32	2270
OR									
6085	P	0.99	0.98	0.94	0.97	0.96	0.95	0.79	0.97
	K	0.00	0.00	0.02	0.00	0.01	0.02	0.07	0.01
	L	0.01	0.02	0.05	0.03	0.03	0.03	0.14	0.02
	N	574	238	66	30	211	287	28	1464
PIPE P		0.98	0.97	0.89	0.90	0.96	0.95	0.85	0.96
PIPE K		0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.01
PIPE L		0.02	0.03	0.10	0.08	0.03	0.03	0.10	0.03
MMN		AU	AL	BU	BL	CU	CL	DU	TOTS
604K	P	1.00	1.00	0.67	0.00	1.00	1.00	0.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
	N	2389	62	3	0	7	2	0	2464
AND									
6493	P	0.99	1.00	1.00	0.00	1.00	1.00	0.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	2262	57	1	0	8	2	0	2331

Table B-2 (continued)

AND									
130D	P	0.98	0.99	1.00	0.00	1.00	1.00	0.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.02
	N	2559	71	5	0	12	1	0	2651
AND									
130E	P	0.72	0.61	0.38	0.00	0.67	1.00	0.00	0.72
	K	0.19	0.28	0.50	0.00	0.27	0.00	0.00	0.20
	L	0.08	0.11	0.13	0.00	0.07	0.00	0.00	0.08
	N	4571	101	8	0	15	2	0	4702
PIPE P		0.70	0.61	0.25	0.00	0.67	1.00	0.00	0.70
PIPE K		0.19	0.27	0.33	0.00	0.27	0.00	0.00	0.19
PIPE L		0.11	0.12	0.42	0.00	0.07	0.00	0.00	0.11
MM4		AU	AL	BU	BL	CU	CL	DU	TOTS
6262	P	0.98	0.98	0.92	0.80	0.91	0.85	0.87	0.89
	K	0.01	0.01	0.01	0.03	0.04	0.12	0.10	0.07
	L	0.01	0.01	0.07	0.17	0.05	0.04	0.04	0.04
	N	281	231	97	88	286	868	84	1991
AND									
6492	P	0.98	0.97	0.90	0.90	0.97	0.94	0.86	0.95
	K	0.00	0.01	0.01	0.03	0.01	0.04	0.08	0.02
	L	0.02	0.02	0.09	0.07	0.02	0.02	0.06	0.03
	N	349	229	90	70	263	747	78	1878
PIPE P		0.96	0.95	0.83	0.72	0.88	0.80	0.75	0.85
PIPE K		0.01	0.03	0.02	0.06	0.05	0.15	0.16	0.09
PIPE L		0.03	0.03	0.15	0.23	0.07	0.05	0.09	0.07
MM6		AU	AL	BU	BL	CU	CL	DU	TOTS
6262	P	0.98	0.98	0.92	0.80	0.91	0.85	0.87	0.89
	K	0.01	0.01	0.01	0.03	0.04	0.12	0.10	0.07
	L	0.01	0.01	0.07	0.17	0.05	0.04	0.04	0.04
	N	281	231	97	88	286	868	84	1991
AND									
6492	P	0.98	0.97	0.90	0.90	0.97	0.94	0.86	0.95
	K	0.00	0.01	0.01	0.03	0.01	0.04	0.08	0.02
	L	0.02	0.02	0.09	0.07	0.02	0.02	0.06	0.03
	N	349	229	90	70	263	747	78	1878
AND									
608M	P	1.00	1.00	0.83	1.00	1.00	0.00	0.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.02
	N	20	12	6	2	6	0	0	46
PIPE P		0.96	0.95	0.69	0.72	0.88	0.00	0.00	0.83
PIPE K		0.01	0.03	0.02	0.06	0.05	0.00	0.00	0.09
PIPE L		0.03	0.03	0.29	0.23	0.07	0.00	0.00	0.08

Table B-2 (continued)

MS		AU	AL	BU	BL	CU	CL	DU	TOTS
6125	P	1.00	0.99	0.95	0.94	0.98	0.98	0.96	0.97
	K	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.01
	L	0.00	0.01	0.04	0.06	0.01	0.01	0.04	0.01
	N	311	249	85	70	321	1008	90	2197
PIPE P		1.00	0.99	0.95	0.94	0.98	0.98	0.96	0.97
PIPE K		0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.01
PIPE L		0.00	0.01	0.04	0.06	0.01	0.01	0.04	0.01

AE		AU	AL	BU	BL	CU	CL	DU	TOTS
6218	P	1.00	1.00	1.00	0.96	0.99	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00
	N	544	261	111	45	153	195	29	1353
AND									
6235	P	0.91	0.85	0.83	0.74	0.80	0.80	0.77	0.85
	K	0.07	0.09	0.10	0.11	0.16	0.14	0.13	0.10
	L	0.02	0.06	0.07	0.15	0.04	0.06	0.10	0.05
	N	595	284	126	61	173	234	40	1540
AND									
6515	P	0.95	0.93	0.94	0.89	0.93	0.88	0.84	0.93
	K	0.02	0.02	0.01	0.04	0.03	0.07	0.11	0.03
	L	0.04	0.04	0.05	0.06	0.03	0.05	0.05	0.04
	N	564	271	114	47	153	189	38	1401
PIPE P		0.86	0.79	0.77	0.63	0.75	0.71	0.65	0.79
PIPE K		0.09	0.11	0.11	0.16	0.18	0.20	0.21	0.13
PIPE L		0.06	0.10	0.11	0.21	0.07	0.10	0.14	0.09

EW4		AU	AL	BU	BL	CU	CL	DU	TOTS
6306	P	0.93	0.88	0.89	0.70	0.86	0.92	0.00	0.91
	K	0.02	0.09	0.05	0.20	0.06	0.08	0.00	0.04
	L	0.05	0.02	0.05	0.10	0.08	0.00	1.00	0.05
	N	438	85	74	10	36	26	1	671
AND									
602B	P	0.96	0.93	0.94	0.93	0.88	0.88	0.00	0.95
	K	0.02	0.05	0.01	0.00	0.08	0.06	1.00	0.03
	L	0.02	0.02	0.05	0.07	0.04	0.06	0.00	0.03
	N	426	86	84	15	24	16	1	655
AND									
602C	P	0.99	0.98	0.99	0.93	1.00	1.00	1.00	0.99
	K	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.01	0.07	0.00	0.00	0.00	0.01
	N	348	66	81	14	18	13	2	545
AND									
608J	P	0.98	0.96	0.96	1.00	0.93	1.00	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.04	0.04	0.00	0.07	0.00	0.00	0.02
	N	290	54	74	10	15	11	2	461
PIPE P		0.87	0.78	0.79	0.61	0.70	0.81	0.00	0.83
PIPE K		0.04	0.15	0.06	0.20	0.13	0.13	0.00	0.07
PIPE L		0.09	0.07	0.14	0.19	0.17	0.06	1.00	0.10

Table B-2 (continued)

EW6		AU	AL	BU	BL	CU	CL	DU	TOTS
6306	P	0.93	0.88	0.89	0.70	0.86	0.92	0.00	0.91
	K	0.02	0.09	0.05	0.20	0.06	0.08	0.00	0.04
	L	0.05	0.02	0.05	0.10	0.08	0.00	1.00	0.05
	N	438	85	74	10	36	26	1	671
AND									
602B	P	0.96	0.93	0.94	0.93	0.88	0.88	0.00	0.95
	K	0.02	0.05	0.01	0.00	0.08	0.06	1.00	0.03
	L	0.02	0.02	0.05	0.07	0.04	0.06	0.00	0.03
	N	426	86	84	15	24	16	1	655
AND									
602C	P	0.99	0.98	0.99	0.93	1.00	1.00	1.00	0.99
	K	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.01	0.07	0.00	0.00	0.00	0.01
	N	348	66	81	14	18	13	2	545
AND									
608J	P	0.98	0.96	0.96	1.00	0.93	1.00	1.00	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.02	0.04	0.04	0.00	0.07	0.00	0.00	0.02
	N	290	54	74	10	15	11	2	461
AND									
603A	P	0.97	1.00	0.87	1.00	1.00	1.00	1.00	0.97
	K	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.02
	L	0.01	0.00	0.09	0.00	0.00	0.00	0.00	0.01
	N	230	32	23	8	5	5	1	305
AND									
603B	P	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	193	26	17	5	5	5	1	253
PIPE P		0.84	0.78	0.69	0.61	0.70	0.81	0.00	0.80
PIPE K		0.06	0.15	0.10	0.20	0.13	0.13	0.00	0.08
PIPE L		0.10	0.07	0.21	0.19	0.17	0.06	1.00	0.11
EO		AU	AL	BU	BL	CU	CL	DU	TOTS
6097	P	0.96	0.92	1.00	1.00	0.96	0.97	0.86	0.96
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.04	0.08	0.00	0.00	0.04	0.03	0.14	0.04
	N	25	13	1	6	25	77	7	159
OR									
6292	P	0.97	1.00	1.00	1.00	0.91	0.97	1.00	0.97
	K	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.01
	L	0.03	0.00	0.00	0.00	0.04	0.03	0.00	0.02
	N	35	18	4	4	23	69	5	161
PIPE P		0.97	0.97	1.00	1.00	0.94	0.97	0.92	0.97
PIPE K		0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
PIPE L		0.03	0.03	0.00	0.00	0.04	0.03	0.08	0.03
OS		AU	AL	BU	BL	CU	CL	DU	TOTS
6540	P	0.97	0.94	0.92	0.88	0.93	0.93	0.79	0.94
	K	0.01	0.03	0.03	0.04	0.06	0.05	0.10	0.03
	L	0.02	0.03	0.06	0.08	0.02	0.02	0.10	0.03
	N	763	410	200	85	179	164	48	1862

Table B-2 (continued)

PIPE P		0.97	0.94	0.92	0.88	0.93	0.93	0.79	0.94
PIPE K		0.01	0.03	0.03	0.04	0.06	0.05	0.10	0.03
PIPE L		0.02	0.03	0.06	0.08	0.02	0.02	0.10	0.03
RM		AU	AL	BU	BL	CU	CL	DU	TOTS
6380	P	0.98	0.99	1.00	0.96	0.97	0.96	0.92	0.97
	K	0.00	0.00	0.00	0.02	0.01	0.02	0.04	0.01
	L	0.01	0.00	0.00	0.02	0.03	0.02	0.04	0.02
	N	404	225	95	48	271	575	72	1740
OR									
6381	P	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
	N	114	102	15	11	118	312	15	698
AND									
RM		AU	AL	BU	BL	CU	CL	DU	TOTS
6144	P	0.92	0.91	0.89	0.75	0.89	0.88	0.90	0.89
	K	0.01	0.02	0.00	0.08	0.03	0.04	0.03	0.03
	L	0.06	0.07	0.11	0.17	0.07	0.08	0.07	0.08
	N	552	387	97	52	426	947	68	2573
PIPE P		0.91	0.91	0.89	0.72	0.87	0.85	0.84	0.87
PIPE K		0.02	0.02	0.00	0.09	0.04	0.06	0.06	0.04
PIPE L		0.07	0.07	0.11	0.18	0.09	0.09	0.10	0.09
SK		AU	AL	BU	BL	CU	CL	DU	TOTS
6059	P	0.97	0.89	0.91	0.71	0.85	0.84	0.83	0.91
	K	0.01	0.02	0.03	0.07	0.06	0.04	0.11	0.02
	L	0.02	0.09	0.06	0.22	0.09	0.12	0.06	0.06
	N	519	252	80	41	156	69	18	1146
PIPE P		0.97	0.89	0.91	0.71	0.85	0.84	0.83	0.91
PIPE K		0.01	0.02	0.03	0.07	0.06	0.04	0.11	0.02
PIPE L		0.02	0.09	0.06	0.22	0.09	0.12	0.06	0.06
HT		AU	AL	BU	BL	CU	CL	DU	TOTS
6119	P	1.00	0.99	0.94	0.96	1.00	0.98	0.92	0.98
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.01	0.06	0.04	0.00	0.02	0.08	0.02
	N	225	145	32	24	122	174	25	762
OR									
6120	P	0.95	0.99	0.92	0.95	0.94	0.96	0.95	0.96
	K	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01
	L	0.04	0.01	0.08	0.05	0.06	0.02	0.05	0.04
	N	251	169	51	20	117	162	20	808
PIPE P		0.97	0.99	0.93	0.95	0.97	0.97	0.93	0.97
PIPE K		0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PIPE L		0.03	0.01	0.07	0.05	0.03	0.02	0.07	0.03

Table B-3. A-School attrition 1985

AC		AU	AL	BU	BL	CU	CL	DU	TOTS
6278	P	0.78	0.53	0.63	0.38	0.48	0.43	0.50	0.63
	K	0.18	0.42	0.19	0.46	0.46	0.55	0.17	0.31
	L	0.04	0.05	0.19	0.15	0.07	0.02	0.33	0.06
	N	342	134	27	13	90	56	6	758
PIPE P		0.78	0.53	0.63	0.38	0.48	0.43	0.50	0.63
PIPE K		0.18	0.42	0.19	0.46	0.46	0.55	0.17	0.31
PIPE L		0.04	0.05	0.19	0.15	0.07	0.02	0.33	0.06

AT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6219	P	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
	K	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	657	152	62	20	85	59	9	1095
AND									
6230	P	0.94	0.81	0.75	0.60	0.82	0.81	0.78	0.88
	K	0.03	0.09	0.11	0.20	0.09	0.14	0.22	0.06
	L	0.03	0.10	0.14	0.20	0.10	0.05	0.00	0.06
	N	503	128	56	20	82	58	9	899
AND									
6239	P	0.90	0.82	0.82	0.64	0.83	0.67	0.60	0.86
	K	0.02	0.07	0.03	0.14	0.07	0.19	0.00	0.05
	L	0.07	0.11	0.15	0.21	0.10	0.13	0.40	0.09
	N	498	110	40	14	70	52	5	828
PIPE P		0.85	0.66	0.62	0.39	0.67	0.55	0.47	0.76
PIPE K		0.05	0.15	0.13	0.29	0.15	0.29	0.22	0.10
PIPE L		0.10	0.19	0.26	0.33	0.18	0.16	0.31	0.14

AT6		AU	AL	BU	BL	CU	CL	DU	TOTS
6219	P	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
	K	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	657	152	62	20	85	59	9	1095
AND									
610A	P	0.95	0.89	0.84	0.86	0.90	0.74	1.00	0.93
	K	0.02	0.06	0.06	0.14	0.03	0.22	0.00	0.03
	L	0.03	0.06	0.10	0.00	0.08	0.04	0.00	0.04
	N	618	108	31	7	39	23	4	846

Definitions

AU= HSDG,AFQTI-II
AL= HSDG,AFQTIIIA
BU= NHS,AFQTI-II
BL= NHS,AFQTIIIA
CU=HSDG,AFQTIIIB
CL=HSDG,AFQTIV
DU=NHS,AFQTIIIB

P=PASS RATE
K=ACADEMIC ATTRITION
L=NONACADEMIC ATTRITION
N=NUMBER OF ENTRANTS

Estimated total attrition rates are computed from all individuals in the data set. For some students either AFQT or HSD status was not known.

Table B-3 (continued)

AND									
610J	P	0.91	0.76	0.79	0.57	0.76	0.79	1.00	0.87
	K	0.04	0.04	0.00	0.00	0.08	0.00	0.00	0.04
	L	0.06	0.19	0.21	0.43	0.16	0.21	0.00	0.09
	N	582	89	24	7	38	14	2	762
AND									
6244	P	0.98	0.96	0.87	1.00	0.88	1.00	1.00	0.97
	K	0.01	0.04	0.00	0.00	0.13	0.00	0.00	0.02
	L	0.02	0.00	0.13	0.00	0.00	0.00	0.00	0.02
	N	488	52	15	3	16	7	2	587
PIPE P		0.84	0.65	0.58	0.49	0.59	0.58	1.00	0.78
PIPE K		0.07	0.13	0.06	0.14	0.19	0.22	0.00	0.08
PIPE L		0.10	0.22	0.36	0.37	0.22	0.20	0.00	0.13

AQ4		AU	AL	BU	BL	CU	CL	DU	TOTS
6220	P	1.00	1.00	1.00	0.88	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
	N	142	66	14	8	32	21	6	306
AND									
6231	P	0.87	0.83	0.93	0.75	0.76	0.73	0.83	0.83
	K	0.07	0.09	0.07	0.00	0.12	0.20	0.17	0.09
	L	0.06	0.09	0.00	0.25	0.12	0.07	0.00	0.07
	N	85	46	14	4	25	15	6	211
AND									
6240	P	0.83	0.79	0.67	0.33	0.71	0.50	0.50	0.76
	K	0.08	0.05	0.08	0.00	0.10	0.42	0.00	0.09
	L	0.09	0.16	0.25	0.67	0.19	0.08	0.50	0.15
	N	87	43	12	3	21	12	6	196
PIPE P		0.72	0.65	0.62	0.22	0.54	0.37	0.42	0.63
PIPE K		0.14	0.13	0.15	0.00	0.19	0.51	0.17	0.17
PIPE L		0.14	0.22	0.23	0.78	0.26	0.13	0.42	0.20

AQ6		AU	AL	BU	BL	CU	CL	DU	TOTS
6220	P	1.00	1.00	1.00	0.88	1.00	1.00	1.00	1.00
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
	N	142	66	14	8	32	21	6	306
AND									
609Z	P	0.87	0.88	0.86	1.00	0.84	0.86	0.00	0.87
	K	0.07	0.04	0.00	0.00	0.03	0.05	0.00	0.05
	L	0.06	0.08	0.14	0.00	0.13	0.09	0.00	0.07
	N	197	76	7	3	38	22	0	350
AND									
610G	P	0.81	0.82	0.80	0.67	0.80	0.75	0.00	0.80
	K	0.07	0.06	0.00	0.33	0.10	0.15	0.00	0.08
	L	0.12	0.12	0.20	0.00	0.10	0.10	0.00	0.12
	N	181	66	5	3	30	20	0	306
AND									
6245	P	0.94	1.00	1.00	1.00	0.93	1.00	0.00	0.95
	K	0.02	0.00	0.00	0.00	0.07	0.00	0.00	0.02
	L	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.03
	N	115	28	2	1	15	7	0	168

Table B-3 (continued)

PIPE P		0.66	0.72	0.69	0.58	0.63	0.65	0.00	0.67
PIPE K		0.15	0.09	0.00	0.29	0.16	0.18	0.00	0.13
PIPE L		0.19	0.19	0.31	0.13	0.22	0.18	0.00	0.20
BT4		AU	AL	BU	BL	CU	CL	DU	TOTS
6260	P	0.98	0.95	0.95	0.92	0.91	0.78	0.64	0.87
	K	0.00	0.02	0.03	0.05	0.01	0.12	0.14	0.07
	L	0.02	0.02	0.03	0.03	0.08	0.10	0.21	0.06
	N	377	129	77	39	118	552	28	1420
AND									
6486	P	0.87	0.85	0.70	0.74	0.78	0.63	0.64	0.76
	K	0.08	0.09	0.15	0.13	0.13	0.26	0.00	0.15
	L	0.05	0.06	0.15	0.13	0.09	0.10	0.36	0.08
	N	384	125	67	39	104	345	14	1130
PIPE P		0.85	0.81	0.67	0.69	0.71	0.50	0.41	0.67
PIPE K		0.08	0.11	0.17	0.17	0.13	0.33	0.14	0.20
PIPE L		0.07	0.08	0.17	0.14	0.16	0.18	0.44	0.13
BT6		AU	AL	BU	BL	CU	CL	DU	TOTS
6260	P	0.98	0.95	0.95	0.92	0.91	0.78	0.64	0.87
	K	0.00	0.02	0.03	0.05	0.01	0.12	0.14	0.07
	L	0.02	0.02	0.03	0.03	0.08	0.10	0.21	0.06
	N	377	129	77	39	118	552	28	1420
AND									
6486	P	0.87	0.85	0.70	0.74	0.78	0.63	0.64	0.76
	K	0.08	0.09	0.15	0.13	0.13	0.26	0.00	0.15
	L	0.05	0.06	0.15	0.13	0.09	0.10	0.36	0.08
	N	384	125	67	39	104	345	14	1130
AND									
6488	P	0.96	0.90	1.00	1.00	1.00	1.00	0.00	0.95
	K	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03
	N	272	58	19	6	12	3	0	372
PIPE P		0.82	0.72	0.67	0.69	0.71	0.50	0.00	0.64
PIPE K		0.09	0.16	0.17	0.17	0.13	0.33	0.00	0.21
PIPE L		0.10	0.11	0.17	0.14	0.16	0.18	0.00	0.15
CTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6308	P	0.90	0.86	0.83	0.00	0.78	0.75	0.00	0.86
	K	0.05	0.07	0.00	1.00	0.13	0.17	0.00	0.08
	L	0.05	0.07	0.17	0.00	0.09	0.08	0.00	0.06
	N	166	44	6	1	23	12	0	273
AND									
605A	P	0.87	0.88	0.67	0.00	0.81	1.00	0.00	0.87
	K	0.08	0.12	0.00	0.00	0.10	0.00	0.00	0.08
	L	0.05	0.00	0.33	0.00	0.10	0.00	0.00	0.05
	N	142	43	3	0	21	11	0	229

Table B-3 (continued)

AND									
605B	P	0.96	0.97	1.00	0.00	0.89	1.00	0.00	0.96
	K	0.03	0.03	0.00	0.00	0.11	0.00	0.00	0.03
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	141	39	2	0	18	9	0	212
AND									
605C	P	0.98	0.95	1.00	0.00	1.00	1.00	0.00	0.97
	K	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01
	N	134	37	2	0	12	8	0	196
AND									
6161	P	0.92	0.92	1.00	0.00	0.77	0.89	0.00	0.91
	K	0.05	0.05	0.00	0.00	0.08	0.11	0.00	0.05
	L	0.03	0.03	0.00	0.00	0.15	0.00	0.00	0.04
	N	153	37	5	0	13	9	0	220
PIPE P		0.68	0.65	0.56	0.00	0.43	0.67	0.00	0.64
PIPE K		0.20	0.25	0.00	0.00	0.32	0.25	0.00	0.23
PIPE L		0.12	0.11	0.44	0.00	0.25	0.08	0.00	0.14
DS		AU	AL	BU	BL	CU	CL	DU	TOTS
6269	P	0.88	0.92	0.76	0.33	0.79	0.89	1.00	0.87
	K	0.07	0.04	0.10	0.33	0.11	0.11	0.00	0.07
	L	0.05	0.04	0.14	0.33	0.11	0.00	0.00	0.06
	N	257	51	21	3	19	9	2	381
OR									
6309	P	0.92	0.00	0.00	0.00	1.00	0.00	0.00	0.88
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.13
	N	13	0	0	0	1	0	0	16
AND									
DS		AU	AL	BU	BL	CU	CL	DU	TOTS
6131	P	0.79	0.76	0.75	0.50	0.41	0.63	0.50	0.76
	K	0.11	0.20	0.06	0.00	0.41	0.38	0.50	0.14
	L	0.09	0.04	0.19	0.50	0.18	0.00	0.00	0.10
	N	308	51	16	2	17	8	2	423
PIPE P		0.70	0.70	0.57	0.17	0.33	0.56	0.50	0.66
PIPE K		0.17	0.22	0.14	0.33	0.43	0.44	0.50	0.19
PIPE L		0.14	0.08	0.29	0.50	0.24	0.00	0.00	0.15
EM		AU	AL	BU	BL	CU	CL	DU	TOTS
6258	P	0.94	0.89	0.89	0.43	0.87	0.82	0.83	0.86
	K	0.02	0.11	0.00	0.29	0.10	0.14	0.00	0.09
	L	0.04	0.00	0.11	0.29	0.03	0.05	0.17	0.04
	N	54	37	9	7	31	44	6	206
OR									
6273	P	0.70	0.66	0.67	0.20	0.55	0.57	0.00	0.58
	K	0.20	0.34	0.00	0.80	0.45	0.41	0.50	0.38
	L	0.10	0.00	0.33	0.00	0.00	0.02	0.50	0.04
	N	30	35	3	5	29	49	4	162
OR									
6303	P	0.74	0.65	0.33	0.40	0.39	0.53	1.00	0.60
	K	0.18	0.27	0.67	0.20	0.52	0.40	0.00	0.30
	L	0.08	0.09	0.00	0.40	0.10	0.06	0.00	0.10
	N	154	79	3	5	62	47	3	429

Table B-3 (continued)

AND EM		AU	AL	BU	BL	CU	CL	DU	TOTS
6070	P	0.88	0.95	0.92	0.91	0.90	0.87	1.00	0.90
	K	0.07	0.04	0.00	0.09	0.07	0.12	0.00	0.07
	L	0.05	0.02	0.08	0.00	0.03	0.01	0.00	0.03
	N	198	129	12	11	90	107	6	597
PIPE P		0.69	0.67	0.67	0.32	0.49	0.55	0.62	0.60
PIPE K		0.19	0.27	0.13	0.44	0.43	0.40	0.15	0.31
PIPE L		0.12	0.06	0.19	0.24	0.08	0.05	0.23	0.09
EMN		AU	AL	BU	BL	CU	CL	DU	TOTS
605U	P	0.97	0.96	1.00	0.00	1.00	0.67	0.00	0.97
	K	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.01
	L	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.03
	N	1216	28	4	0	7	3	0	1318
AND 605Y	P	0.99	0.96	1.00	0.00	1.00	1.00	1.00	0.98
	K	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	1156	28	4	0	3	4	1	1199
AND 130D	P	0.97	0.97	1.00	0.00	1.00	0.00	0.00	0.97
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03
	N	2166	36	4	0	7	0	0	2228
AND 130E	P	0.79	0.74	0.50	0.00	0.57	0.00	0.00	0.79
	K	0.16	0.26	0.33	0.00	0.43	0.00	0.00	0.16
	L	0.05	0.00	0.17	0.00	0.00	0.00	0.00	0.05
	N	3825	47	6	0	7	0	0	3910
PIPE P		0.73	0.67	0.50	0.00	0.57	0.00	0.00	0.73
PIPE K		0.16	0.27	0.33	0.00	0.43	0.00	0.00	0.17
PIPE L		0.10	0.06	0.17	0.00	0.00	0.00	0.00	0.10
ET6		AU	AL	BU	BL	CU	CL	DU	TOTS
6403	P	0.85	0.75	0.71	0.38	0.81	0.50	0.50	0.82
	K	0.09	0.17	0.14	0.25	0.15	0.50	0.25	0.11
	L	0.06	0.09	0.14	0.38	0.04	0.00	0.25	0.07
	N	805	126	21	8	48	16	4	1099
OR 6409	P	0.82	0.77	0.76	0.60	0.67	0.55	0.50	0.79
	K	0.13	0.20	0.24	0.20	0.31	0.45	0.50	0.16
	L	0.05	0.03	0.00	0.20	0.02	0.00	0.00	0.04
	N	470	87	29	5	42	11	2	660
OR 6414	P	0.85	0.70	0.86	0.67	0.79	0.60	1.00	0.80
	K	0.09	0.16	0.07	0.20	0.18	0.28	0.00	0.12
	L	0.06	0.13	0.07	0.13	0.03	0.12	0.00	0.08
	N	418	105	28	15	38	43	4	707
AND ET6		AU	AL	BU	BL	CU	CL	DU	TOTS
603V	P	0.79	0.71	0.85	0.67	0.76	0.70	1.00	0.78
	K	0.12	0.22	0.08	0.22	0.13	0.23	0.00	0.13
	L	0.09	0.08	0.08	0.11	0.11	0.07	0.00	0.09
	N	1495	221	53	9	90	44	2	1969

Table B-3 (continued)

PIPE P		0.66	0.52	0.66	0.38	0.57	0.40	0.70	0.63
PIPE K		0.20	0.33	0.21	0.34	0.31	0.49	0.20	0.24
PIPE L		0.13	0.14	0.12	0.28	0.12	0.11	0.10	0.14
ETN		AU	AL	BU	BL	CU	CL	DU	TOTS
6256	P	0.93	0.95	1.00	0.00	0.60	1.00	0.00	0.93
	K	0.03	0.00	0.00	0.00	0.40	0.00	0.00	0.03
	L	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.04
	N	1213	20	1	0	5	2	0	1319
AND									
604E	P	0.80	0.75	0.00	0.00	1.00	0.00	0.00	0.80
	K	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.18	0.19	0.00	0.00	0.00	1.00	0.00	0.18
	N	1151	16	0	0	2	1	0	1177
AND									
130D	P	0.97	0.97	1.00	0.00	1.00	0.00	0.00	0.97
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03
	N	2166	36	4	0	7	0	0	2228
AND									
130E	P	0.79	0.74	0.50	0.00	0.57	0.00	0.00	0.79
	K	0.16	0.26	0.33	0.00	0.43	0.00	0.00	0.16
	L	0.05	0.00	0.17	0.00	0.00	0.00	0.00	0.05
	N	3825	47	6	0	7	0	0	3910
PIPE P		0.58	0.52	0.00	0.00	0.34	0.00	0.00	0.58
PIPE K		0.16	0.24	0.00	0.00	0.66	0.00	0.00	0.16
PIPE L		0.26	0.25	0.00	0.00	0.00	0.00	0.00	0.26
FTG		AU	AL	BU	BL	CU	CL	DU	TOTS
6248	P	0.88	0.84	0.83	0.63	0.73	0.71	0.00	0.85
	K	0.05	0.07	0.00	0.00	0.12	0.07	0.50	0.06
	L	0.07	0.09	0.17	0.38	0.15	0.21	0.50	0.10
	N	292	45	12	8	26	14	2	420
OR									
6359	P	0.87	0.87	0.89	0.50	0.67	0.86	0.00	0.84
	K	0.08	0.04	0.11	0.50	0.21	0.14	0.00	0.10
	L	0.05	0.09	0.00	0.00	0.13	0.00	0.00	0.05
	N	207	45	18	6	24	7	0	324
OR									
6310	P	0.88	0.89	0.33	0.00	0.75	0.56	0.50	0.84
	K	0.07	0.07	0.17	0.00	0.25	0.44	0.00	0.10
	L	0.04	0.04	0.50	1.00	0.00	0.00	0.50	0.06
	N	137	27	6	1	8	9	2	193
AND									
FTG		AU	AL	BU	BL	CU	CL	DU	TOTS
609W	P	0.85	0.79	0.70	0.83	0.68	0.71	0.00	0.82
	K	0.06	0.10	0.04	0.00	0.17	0.14	1.00	0.07
	L	0.09	0.11	0.26	0.17	0.15	0.14	0.00	0.11
	N	583	112	27	6	40	21	1	808
PIPE P		0.74	0.69	0.55	0.44	0.48	0.50	0.00	0.69
PIPE K		0.12	0.14	0.11	0.20	0.30	0.30	0.50	0.14
PIPE L		0.14	0.17	0.34	0.36	0.23	0.20	0.50	0.16

Table B-3 (continued)

FTM		AU	AL	BU	BL	CU	CL	DU	TOTS
6249	P	0.89	0.83	0.85	0.50	0.71	0.65	0.33	0.84
	K	0.04	0.14	0.04	0.33	0.21	0.24	0.33	0.09
	L	0.07	0.03	0.12	0.17	0.08	0.12	0.33	0.08
	N	308	70	26	12	24	17	3	495
OR									
6358	P	0.86	0.86	0.86	1.00	0.86	0.67	0.00	0.85
	K	0.11	0.10	0.14	0.00	0.14	0.00	1.00	0.11
	L	0.03	0.03	0.00	0.00	0.00	0.33	0.00	0.03
	N	182	59	14	1	14	6	1	294
OR									
6311	P	0.93	0.87	1.00	0.00	0.89	0.70	0.00	0.89
	K	0.04	0.13	0.00	1.00	0.11	0.30	0.50	0.07
	L	0.03	0.00	0.00	0.00	0.00	0.00	0.50	0.03
	N	129	30	7	1	9	10	2	204
AND									
FTM		AU	AL	BU	BL	CU	CL	DU	TOTS
609X	P	0.83	0.67	0.72	0.50	0.75	0.82	0.50	0.79
	K	0.07	0.22	0.07	0.50	0.15	0.09	0.50	0.10
	L	0.10	0.11	0.21	0.00	0.10	0.09	0.00	0.10
	N	565	123	29	4	40	22	2	806
PIPE P		0.74	0.57	0.63	0.25	0.59	0.55	0.08	0.68
PIPE K		0.12	0.31	0.12	0.61	0.29	0.27	0.58	0.18
PIPE L		0.14	0.12	0.24	0.14	0.12	0.18	0.33	0.14

HM		AU	AL	BU	BL	CU	CL	DU	TOTS
6084	P	0.98	0.96	0.89	0.74	0.93	0.87	0.86	0.93
	K	0.01	0.01	0.03	0.13	0.03	0.09	0.10	0.04
	L	0.02	0.03	0.09	0.13	0.04	0.04	0.03	0.03
	N	952	447	105	69	466	849	59	3202
OR									
6085	P	0.97	0.90	0.89	0.84	0.89	0.85	0.70	0.90
	K	0.01	0.06	0.00	0.06	0.05	0.08	0.06	0.04
	L	0.03	0.03	0.11	0.09	0.07	0.07	0.24	0.05
	N	439	155	56	32	168	278	33	1281
PIPE P		0.97	0.95	0.89	0.77	0.92	0.86	0.80	0.92
PIPE K		0.01	0.02	0.02	0.11	0.03	0.09	0.09	0.04
PIPE L		0.02	0.03	0.09	0.12	0.05	0.05	0.11	0.04

MMN		AU	AL	BU	BL	CU	CL	DU	TOTS
604K	P	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	2384	54	6	1	10	4	0	2562
AND									
611G	P	0.96	0.91	1.00	0.00	0.78	1.00	0.00	0.95
	K	0.02	0.05	0.00	0.00	0.22	0.00	0.00	0.02
	L	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.02
	N	2652	55	5	0	9	3	0	2741
AND									
130D	P	0.97	0.97	1.00	0.00	1.00	0.00	0.00	0.97
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03
	N	2166	36	4	0	7	0	0	2228

Table B-3 (continued)

AND									
130E	P	0.79	0.74	0.50	0.00	0.57	0.00	0.00	0.79
	K	0.16	0.26	0.33	0.00	0.43	0.00	0.00	0.16
	L	0.05	0.00	0.17	0.00	0.00	0.00	0.00	0.05
	N	3825	47	6	0	7	0	0	3910
PIPE P		0.73	0.66	0.50	0.00	0.44	0.00	0.00	0.73
PIPE K		0.17	0.28	0.33	0.00	0.56	0.00	0.00	0.17
PIPE L		0.10	0.06	0.17	0.00	0.00	0.00	0.00	0.10

MM4		AU	AL	BU	BL	CU	CL	DU	TOTS
6262	P	0.99	0.96	0.94	0.86	0.93	0.84	0.80	0.91
	K	0.01	0.00	0.03	0.07	0.02	0.13	0.09	0.06
	L	0.01	0.04	0.03	0.07	0.05	0.04	0.11	0.03
	N	344	122	36	44	150	510	45	1304
AND									
6492	P	0.90	0.80	0.73	0.63	0.72	0.65	0.50	0.75
	K	0.05	0.13	0.03	0.19	0.17	0.26	0.30	0.16
	L	0.05	0.07	0.24	0.19	0.11	0.09	0.20	0.09
	N	332	108	33	32	131	385	30	1091
PIPE P		0.89	0.76	0.69	0.54	0.66	0.54	0.40	0.68
PIPE K		0.05	0.12	0.06	0.23	0.18	0.35	0.33	0.21
PIPE L		0.06	0.11	0.26	0.23	0.16	0.11	0.27	0.11

MM6		AU	AL	BU	BL	CU	CL	DU	TOTS
6262	P	0.99	0.96	0.94	0.86	0.93	0.84	0.80	0.91
	K	0.01	0.00	0.03	0.07	0.02	0.13	0.09	0.06
	L	0.01	0.04	0.03	0.07	0.05	0.04	0.11	0.03
	N	344	122	36	44	150	510	45	1304
AND									
6492	P	0.90	0.80	0.73	0.63	0.72	0.65	0.50	0.75
	K	0.05	0.13	0.03	0.19	0.17	0.26	0.30	0.16
	L	0.05	0.07	0.24	0.19	0.11	0.09	0.20	0.09
	N	332	108	33	32	131	385	30	1091
AND									
608M	P	0.96	0.97	1.00	1.00	0.92	0.50	1.00	0.96
	K	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.04	0.00	0.00	0.00	0.08	0.50	0.00	0.03
	N	200	31	5	3	12	2	1	259
PIPE P		0.85	0.74	0.69	0.54	0.61	0.27	0.40	0.65
PIPE K		0.05	0.15	0.06	0.23	0.18	0.35	0.33	0.21
PIPE L		0.09	0.11	0.26	0.23	0.21	0.38	0.27	0.14

MS		AU	AL	BU	BL	CU	CL	DU	TOTS
6125	P	0.99	0.97	0.96	0.89	0.97	0.92	0.87	0.94
	K	0.00	0.01	0.00	0.00	0.03	0.03	0.00	0.02
	L	0.01	0.02	0.04	0.11	0.00	0.05	0.13	0.04
	N	225	154	73	64	210	1039	86	2055

Table B-3 (continued)

PIPE P		0.99	0.97	0.96	0.89	0.97	0.92	0.87	0.94
PIPE K		0.00	0.01	0.00	0.00	0.03	0.03	0.00	0.02
PIPE L		0.01	0.02	0.04	0.11	0.00	0.05	0.13	0.04
AE		AU	AL	BU	BL	CU	CL	DU	TOTS
6218	P	1.00	1.00	0.98	1.00	1.00	0.99	0.98	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
	L	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00
	N	455	245	116	58	231	348	41	1562
AND									
6235	P	0.87	0.83	0.75	0.49	0.75	0.72	0.63	0.78
	K	0.06	0.10	0.13	0.25	0.18	0.19	0.26	0.13
	L	0.06	0.07	0.11	0.26	0.07	0.09	0.12	0.09
	N	465	237	122	61	231	364	43	1583
AND									
6515	P	0.93	0.88	0.84	0.75	0.84	0.78	0.70	0.86
	K	0.04	0.07	0.06	0.18	0.14	0.19	0.17	0.10
	L	0.03	0.04	0.10	0.07	0.02	0.03	0.13	0.04
	N	416	187	89	28	161	250	30	1203
PIPE P		0.81	0.73	0.62	0.37	0.63	0.56	0.43	0.67
PIPE K		0.10	0.17	0.17	0.33	0.28	0.32	0.38	0.21
PIPE L		0.09	0.11	0.20	0.30	0.09	0.12	0.20	0.12
EW4		AU	AL	BU	BL	CU	CL	DU	TOTS
6306	P	0.91	1.00	1.00	1.00	1.00	1.00	0.00	0.95
	K	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	L	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	N	34	10	2	4	3	1	0	57
OR									
611M	P	0.97	0.94	0.82	1.00	0.95	1.00	1.00	0.96
	K	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.01
	L	0.02	0.06	0.18	0.00	0.00	0.00	0.00	0.03
	N	209	49	11	4	21	8	1	309
AND									
EW4		AU	AL	BU	BL	CU	CL	DU	TOTS
602B	P	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.99
	K	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	39	11	4	3	4	4	1	72
AND									
602C	P	0.98	1 00	1.00	1.00	1.00	1.00	1.00	0.99
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	95	17	9	1	8	8	1	145
AND									
608J	P	0.95	0.95	0.95	0.64	0.94	0.84	1.00	0.94
	K	0.02	0.04	0.00	0.18	0.06	0.16	0.00	0.04
	L	0.03	0.01	0.05	0.18	0.00	0.00	0.00	0.03
	N	459	99	21	11	49	31	2	693
PIPE P		0.87	0.90	0.81	0.64	0.90	0.84	1.00	0.87
PIPE K		0.07	0.04	0.00	0.18	0.10	0.16	0.00	0.07
PIPE L		0.06	0.06	0.19	0.18	0.00	0.00	0.00	0.06

Table B-3 (continued)

EW6		AU	AL	BU	BL	CU	CL	DU	TOTS
6303	P	0.74	0.65	0.33	0.40	0.39	0.53	1.00	0.60
	K	0.18	0.27	0.67	0.20	0.52	0.40	0.00	0.30
	L	0.08	0.09	0.00	0.40	0.10	0.06	0.00	0.10
	N	154	79	3	5	62	47	3	429
OR									
611M	P	0.97	0.94	0.82	1.00	0.95	1.00	1.00	0.96
	K	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.01
	L	0.02	0.06	0.18	0.00	0.00	0.00	0.00	0.03
	N	209	49	11	4	21	8	1	309
AND									
EW6		AU	AL	BU	BL	CU	CL	DU	TOTS
602B	P	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.99
	K	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N	39	11	4	3	4	4	1	72
AND									
602C	P	0.98	1.00	1.00	1.00	1.00	1.00	1.00	0.99
	K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	95	17	9	1	8	8	1	145
AND									
608J	P	0.95	0.95	0.95	0.64	0.94	0.84	1.00	0.94
	K	0.02	0.04	0.00	0.18	0.06	0.16	0.00	0.04
	L	0.03	0.01	0.05	0.18	0.00	0.00	0.00	0.03
	N	459	99	21	11	49	31	2	693
AND									
603A	P	0.97	0.96	1.00	1.00	1.00	1.00	1.00	0.98
	K	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.02
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	102	24	19	5	6	8	2	176
AND									
603B	P	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	N	99	20	12	3	6	9	1	156
PIPE P		0.76	0.69	0.68	0.42	0.50	0.50	1.00	0.67
PIPE K		0.15	0.22	0.14	0.23	0.43	0.44	0.00	0.23
PIPE L		0.09	0.09	0.18	0.34	0.07	0.05	0.00	0.10
EO		AU	AL	BU	BL	CU	CL	DU	TOTS
6097	P	1.00	0.94	1.00	0.75	1.00	0.97	1.00	0.96
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.00	0.06	0.00	0.25	0.00	0.03	0.00	0.04
	N	15	17	2	4	23	62	8	142
OR									
6292	P	0.92	0.94	1.00	1.00	0.95	0.93	0.67	0.93
	K	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02
	L	0.08	0.06	0.00	0.00	0.05	0.03	0.33	0.05
	N	13	17	1	4	19	86	3	149
PIPE P		0.96	0.94	1.00	0.88	0.98	0.95	0.91	0.95
PIPE K		0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01
PIPE L		0.04	0.06	0.00	0.13	0.02	0.03	0.09	0.04

Table B-3 (continued)

OS		AU	AL	BU	BL	CU	CL	DU	TOTS
6540	P	0.94	0.93	0.88	0.73	0.93	0.94	0.82	0.91
	K	0.01	0.03	0.01	0.08	0.02	0.02	0.05	0.02
	L	0.05	0.04	0.11	0.19	0.05	0.04	0.13	0.06
	N	592	360	158	112	207	162	60	1761
PIPE P		0.94	0.93	0.88	0.73	0.93	0.94	0.82	0.91
PIPE K		0.01	0.03	0.01	0.08	0.02	0.02	0.05	0.02
PIPE L		0.05	0.04	0.11	0.19	0.05	0.04	0.13	0.06

RM		AU	AL	BU	BL	CU	CL	DU	TOTS
611E	P	0.96	0.91	0.85	0.81	0.93	0.89	0.67	0.91
	K	0.01	0.02	0.05	0.03	0.04	0.05	0.16	0.04
	L	0.04	0.07	0.10	0.16	0.03	0.06	0.18	0.05
	N	567	321	60	58	456	1356	51	3051
PIPE P		0.96	0.91	0.85	0.81	0.93	0.89	0.67	0.91
PIPE K		0.01	0.02	0.05	0.03	0.04	0.05	0.16	0.04
PIPE L		0.04	0.07	0.10	0.16	0.03	0.06	0.18	0.05

SK		AU	AL	BU	BL	CU	CL	DU	TOTS
6059	P	0.98	0.93	0.85	0.69	0.91	0.88	0.67	0.91
	K	0.00	0.04	0.05	0.11	0.06	0.08	0.07	0.04
	L	0.02	0.03	0.09	0.20	0.03	0.05	0.26	0.05
	N	413	297	95	80	172	120	46	1378
PIPE P		0.98	0.93	0.85	0.69	0.91	0.88	0.67	0.91
PIPE K		0.00	0.04	0.05	0.11	0.06	0.08	0.07	0.04
PIPE L		0.02	0.03	0.09	0.20	0.03	0.05	0.26	0.05

HT		AU	AL	BU	BL	CU	CL	DU	TOTS
6119	P	0.97	0.98	0.95	0.98	0.98	0.97	0.93	0.97
	K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	L	0.03	0.02	0.05	0.02	0.02	0.03	0.07	0.03
	N	198	147	41	45	172	351	30	1064
OR									
6120	P	0.97	0.96	0.92	0.81	0.95	0.97	0.97	0.95
	K	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00
	L	0.03	0.04	0.08	0.17	0.04	0.03	0.03	0.04
	N	314	183	49	48	189	288	38	1211
PIPE P		0.97	0.97	0.93	0.89	0.96	0.97	0.96	0.96
PIPE K		0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
PIPE L		0.03	0.03	0.07	0.10	0.03	0.03	0.04	0.04

Table B-4. Listing of pipeline-characteristic variables by fiscal year

	FY 1981			FY 1983			FY 1985		
RATE	PIPE LEN	NUMCDP	CDP LEN	PIPE LEN	NUMCDP	CDP	PIPE LEN	NUMCDP	CDP LEN
AC	96	1.0	96.0	96	1.0	96.0	106	1.0	106.0
AE	123	3.0	41.0	139	3.0	46.3	150	3.0	50.0
AQ4	169	3.0	56.3	168	3.0	56.0	160	3.0	53.3
AQ6	307	4.0	76.8	306	4.0	76.5	298	4.0	74.5
AT4	170	3.0	56.7	169	3.0	56.3	161	3.0	54.7
AT6	308	4.0	77.0	307	4.0	76.8	299	4.0	74.8
BT4	61	3.0	24.7	82	2.0	40.0	86	2.5	29.0
BT6	.	.	.	143	3.0	47.0	147	3.5	37.0
CTM	291	5.0	58.3	274	5.0	54.8	288	5.0	57.6
DS	240	2.0	110.0	240	2.0	110.5	240	2.0	110.5
EM	136	2.0	58.3	136	2.0	58.3	162	2.0	71.5
EMN	.	.	.	327	4.0	81.8	353	4.0	88.3
EO	54	1.0	52.0	54	1.0	54.0	54	1.0	54.0
ET6	248	2.0	124.0	233	2.0	116.7	235	2.0	117.3
ETN	436	4.0	108.5	440	4.0	110.0	442	4.0	110.5
EW4	197	5.0	39.3	192	4.0	48.0	181	4.0	45.1
EW6	256	7.0	36.5	251	6.0	41.8	233	6.0	35.6
FTG	195	3.0	66.7	157	3.0	78.1	235	2.0	128.7
FTM	190	3.0	76.3	190	3.0	76.8	254	2.0	126.8
HM	71	1.0	71.0	71	1.0	71.0	71	1.0	71.0
HT	79	3.0	26.3	78	1.0	78.0	78	1.0	78.0
MM4	57	2.0	27.8	82	2.0	40.0	86	2.0	42.0
MM6	.	.	.	143	3.0	47.0	147	3.0	48.3
MMN	.	.	.	259	4.0	85.6	298	4.0	74.0
MS	60	1.0	40.0	60	1.0	40.0	60	1.0	40.0
OS	82	1.0	82.0	89	1.0	89.0	117	1.0	117.0
RM	104	2.0	37.0	171	2.0	34.5	188	13.0	18.5
SK	45	1.0	40.0	46	1.0	43.0	62	1.0	59.0

APPENDIX C

STATISTICAL MODEL AND ESTIMATION RESULTS

APPENDIX C

STATISTICAL MODEL AND ESTIMATION RESULTS

The multinomial logit model is used to estimate the effect of student and pipeline characteristics on the pass and attrition rates. The probability an individual in a given quality group in a fiscal year will pass (P), fail for academic reasons (K), or fail for nonacademic reasons (L) is assumed to be related to the vector of explanatory variables (X) by:

$$K = exp\left(X'\beta_K\right)/D \quad , \tag{C-1}$$

$$L = exp\left(X'\beta_L\right)/D \quad , \tag{C-2}$$

and

$$P = exp\left(X'\beta_P\right)/D \quad , \tag{C-3}$$

where $D = \left[exp\left(X'\beta_K\right) + exp\left(X'\beta_L\right) + exp\left(X'\beta_P\right)\right]$ and β_P, β_K, and β_L are vectors of parameters. Note that parameter vectors are indexed differently in the three equations indicating that explanatory variables may have differential effects on the pass, academic attrition, and non-academic attrition rates. The explanatory variables include the dummy variables defining the quality group/fiscal year observation and the pipeline-length variable.

Equations C-1, C-2, and C-3 are in the general form of the multinomial logit model.[1] The academic and nonacademic attrition rates relative to the pass rate are:

$$\frac{K}{P} = \frac{exp\left(X'\beta_K\right)}{exp\left(X'\beta_P\right)} = exp\left[X'\left(\beta_K - \beta_P\right)\right] \quad , \tag{C-4}$$

1. The multinomial logit model is discussed in more detail in other CNA studies [3] and in the statistical literature [4].

and

$$\frac{L}{P} = \frac{exp\left(X'\beta_L\right)}{exp\left(X'\beta_P\right)} = exp\left[X'\left(\beta_L - \beta_P\right)\right] \quad . \tag{C-5}$$

A normalization rule is required. In this case assume $\beta_P = 0$. This condition, together with equations C-4 and C-5, identifies the rates and guarantees that they sum to unity for each observation rate. The resulting pass and attrition rates are:

$$K = exp\left(X'\beta_K\right)/\left[1 + exp\left(X'\beta_K\right) + exp\left(X'\beta_L\right)\right] \quad , \tag{C-6}$$

$$L = exp\left(X'\beta_L\right)/\left[1 + exp\left(X'\beta_K\right) + exp\left(X'\beta_L\right)\right] \quad , \tag{C-7}$$

and

$$P = 1/\left[1 + exp\left(X'\beta_K\right) + exp\left(X'\beta_L\right)\right] \quad . \tag{C-8}$$

With grouped data, in this case sample proportions of rating, quality group, and fiscal year, the logit model may be estimated using regression techniques. Equations C-6, C-7, and C-8 imply two log-odds equations:

$$log\left(K/P\right) = X'\beta_K + u_K \quad , \tag{C-9}$$

and

$$log\left(L/P\right) = X'\beta_L + u_L \quad , \tag{C-10}$$

where u_K and u_L are random disturbances. Ordinary least squares estimates of β_K and β_L will be unbiased and consistent but not efficient (i.e., will not have minimum sampling variance) for two reasons. First, there is the problem of heteroscedasticity (the variances of the error terms are not constant across the observations but vary systematically with the number of students in each cell). Second, the covariance across equations is non-zero; note how β_L enters in the equation for K and β_K enters in the equation for L. Efficient estimates can be obtained by a two-step generalized least squares procedure provided that two conditions are met: (1) the rates are strictly between zero and one and (2) the rates sum to unity, that is, $K + L + P = 1$. The first

condition was violated for some of the (fiscal year rating, quality group) cells. That is, for about 10 observations (out of over 500), all the individuals were clustered into only one or two of the three possible cells; for example, because there was no nonacademic attrition for individuals in a given rating, quality group, and year, L equals zero for that observation. To circumvent this problem, the probabilities were truncated at .001 and .099 and the observations were renormalized to sum to one.[1]

A feature of the multinomial logit model is that the coefficients β_K and β_L do not give the partial derivatives of K and L with respect to the explanatory variables X. The method used for determining the effect depends on whether the independent variable is continuous (e.g., pipeline length in days) or discrete (a dummy variable such as quality group).

To estimate how small changes in the length of the pipeline affect attrition, the partial derivative of the logit functions with respect to the length variable was used. These partial derivatives are:

$$\frac{\partial L}{\partial (LEN)} = \beta_{K(\ell)}\, K\,(1-K) - \beta\, K_{L(\ell)} \cdot L \ , \tag{C-11}$$

$$\frac{\partial L}{\partial (LEN)} = \beta_{L(\ell)} L(1-L) - \beta_{K(\ell)} \cdot KL \ , \tag{C-12}$$

and

$$\frac{\partial P}{\partial (LEN)} = \frac{-\partial K}{\partial (LEN)} - \frac{\partial L}{\partial (LEN)} \ , \tag{C-13}$$

where $\beta_{K(\ell)}$ and $\beta_{L(\ell)}$ are, respectively, the estimated coefficients of the pipeline-length variable (*LEN*) in the two estimating equations C-9 and C-10.

To obtain the predicted attrition and pass rates reported in the text, values of the explanatory variables and the parameter estimates are inserted into equations C-1, C-2, and C-3. A LOTUS spreadsheet was used to ensure accuracy in computing the predicted rates for the various quality groups and fiscal years. The analysis also used the appropriate values of the explanatory variables and the average pipeline length for the various fiscal years in the sample.

1. This adjustment allows one to obtain estimates of the coefficients. However, the procedure does reduce the variance in the sample probabilities, which causes a downward bias in the coefficient estimates.

The multinomial logit model was fit to the rating group (technical and nontechnical) subsamples separately. The regression results are given in table C-1. For each regression, the control group is the CU cell students in FY 1985. The coefficients of the quality and fiscal year dummies indicate the differences in the average level of nonacademic (L), or academic (K) attrition relative to the pass rate for that group.

Table C-1. Multinominal logit regression results

	Technical		Nontechnical	
Variable	L/P	K/P	L/P	K/P
Constant	–2.802*	–1.893*	–3.574*	–3.606*
Length	0.005*	0.004*	0.008*	0.009*
Quality dummies				
AU	–0.338*	–0.784*	–0.364*	–0.907*
AL	–0.155*	–0.367*	–0.095	–0.231*
BU	0.626*	–0.567*	0.830*	–0.217
BL	0.987*	0.011	1.267*	0.515*
CL	0.494*	0.416*	0.139*	0.577*
DU	0.841*	0.239*	1.253*	0.783*
Fiscal year dummies				
1981	0.150*	–0.122*	–0.003	–0.570*
1983	–0.234*	–0.329*	–0.184*	–0.420*
Number of observations	337		189	
Log likelihood	–44,325		–19,060	

NOTE: Coefficients with an asterisk indicate significance at the 0.05 level.

The coefficients on the quality dummy variables that measure mental category and education level effects are generally statistically significant. For the nontechnical ratings, however, there is no statistical difference in academic attrition between BU and AL groups and the CU students. In the technical rating sample, statistically significant differences in attrition are measured in all groups except the BL academic attrition rate. The results for both rating groups show that, other things equal, higher mental categories have lower academic attrition than lower mental categories. For the nontechnical ratings, a somewhat weaker pattern of lower

attrition with higher mental category is present, evidenced by the insignificance of the AL and BU coefficients. The regression results also suggest that within mental categories, students with high school diplomas have lower nonacademic attrition. This relationship is weaker and sometimes insignificant for academic attrition across education status.

Fiscal year dummy variables, which were included as explanatory variables, often proved significant. Except for nonacademic attrition in nontechnical ratings between FY 1981 and FY 1985, the results suggest that, other things equal, differences in the average level of attrition are significant. There is a high degree of consistency across the two groups for the FY 1983 variables in sign and magnitude. Holding pipeline length and the quality mix of students constant, FY 1983 has lower academic and nonacademic attrition rates than FY 1985. Except for nonacademic attrition rates in the nontechnical ratings, attrition is higher in FY 1985 (other things equal) than in FY 1981. The increase in the average level of nonacademic attrition in nontechnical ratings in FY 1985 relative to FY 1981 is not statistically significant.

The next step was to determine if the sets of coefficients for different years are equivalent statistically. That is, the objective was to determine if in addition to differences in the average level of attrition across the three years, differences in the coefficients for the three cohorts differ significantly. Three regression models were compared. Table C-2 summarizes the models and gives log-likelihood ratios for the models. The hypothesis of equivalence of the models was rejected in all cases, which suggests that patterns of attrition (e.g., differences in the level of attrition across quality groups) changed each year. Moreover, it suggests that predicted attrition by quality could differ as the coefficients in the model for each fiscal year differs. The multinomial logit model was run separately for each of the three years. The separate-year regression results are given in tables C-3, C-4, and C-5.

Table C-2. Test for difference in models

	Log-likelihood [difference]		
	Model I	Model II	Model III
Technical	–44,458	–44,325	–44,159
Nontechnical	–19,128	–19,060	–19,043

NOTES: Independent variables in the three models are:
- Model I: Constant term, seven quality dummy variables, and pipeline length.
- Model II: Model I variables plus two fiscal year dummy variables.
- Model III: Constant term, 18 quality-fiscal year interaction dummy variables, and 2 fiscal year dummy variables.

Table C-3. Multinomial logit regression results for FY 1981

	Technical		Nontechnical	
Variable	L/P	K/P	L/P	K/P
Constant	–2.949*	–2.214*	–4.566*	–6.886*
Length	0.006*	–.005*	–.018*	0.039*
Quality dummies				
AU	–0.162	–0.669*	–0.290*	–1.044*
AL	0.039	–0.419*	0.013	–0.199
BU	0.757*	–0.328*	1.006*	–0.147
BL	1.157*	0.003	1.432*	0.576*
CL	0.274	0.359*	0.242	0.637*
DU	0.976*	0.328	1.515*	1.155*
Number of observations	98		63	
Log likelihood	–12,600		5,998	

NOTE: Coefficients with an asterisk indicate significance at the 0.05 level.

Table C-4. Multinomial logit regression results for FY 1983

	Technical		Nontechnical	
Variable	L/P	K/P	L/P	K/P
Constant	–3.248*	–2.349*	–3.837*	–4.217*
Length	0.006*	0.005*	0.010*	0.011*
Quality dummies				
AU	–0.168	–0.697*	–0.488*	–1.048
AL	–0.197	–0.359*	–0.160	–0.205
BU	0.800*	–0.688*	0.596*	–0.306
BL	1.011*	–0.090	1.174*	0.557*
CL	–0.118	-0.086	–0.159	0.614*
DU	1.015*	0.270	0.705*	0.724*
Number of observations	120		63	
Log likelihood	–15,744		–5,528	

NOTE: Coefficients with an asterisk indicate significance at the 0.05 level.

Table C-5. Multinomial logit regression results for FY 1985

	Technical		Nontechnical	
Variable	L/P	K/P	L/P	K/P
Constant	–2.365*	–1.623*	–3.068*	–2.920*
Length	0.004*	–0.003*	0.002*	0.003*
Quality dummies				
AU	–0.597*	–0.933*	–0.405*	–0.996*
AL	–0.256*	–0.321*	–0.155	–0.320*
BU	0.387*	–0.777*	0.801*	–0.298
BL	0.887*	0.192	1.240*	0.523*
CL	0.767*	0.667*	0.322*	0.569*
DU	0.637*	0.169	1.399*	0.513*
Number of observations	119		63	
Log likelihood	–15,793		7,196	

NOTE: Coefficients with an asterisk indicate significance at the 0.05 level.